32 dBASE TOOLS EVERYONE CAN USE • MORE WINDOWS SOFTWARE!

PC WORLD

NOVEMBER 1989 $2.95 CANADA $3.95

POWER PRESENTATIONS

BUSINESS GRAPHICS TAKES OVER WHERE SPREADSHEETS STOP

7 Hot Programs Reviewed

EASY DESKTOP PUBLISHING

4 No-Pain Packages

5 PEER-TO-PEER LANs

Simple, Low Cost, and Powerful

MAKING THE MOST OF LANs

How 5 Smart Companies Are Doing It

PREVIEWS

HP's Bargain Laser Printer

FoxPro Challenges dBASE IV

Microsoft Works 2.0

SO HOW COME YOU NEVER CALL?

THE NEW DELL SYSTEM® 210
12.5 MHz 286.

The price says this is an entry-level system. The performance says it's a lot more.

STANDARD FEATURES:

- 80286 microprocessor running at 12.5 MHz.
- Choice of 512 KB, 640 KB††, 1 MB or 2 MB of RAM expandable to 16 MB (6 MB on the system board).
- Page mode interleaved memory architecture.
- LIM 4.0 support for memory over 640 KB.
- Integrated diskette and high performance 16-bit VGA video controller on system board.
- Socket for Intel 80287 math coprocessor.
- 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.
- Integrated high performance hard disk interface on system board.
- Enhanced 101-key keyboard.
- 1 parallel and 2 serial ports.
- 3 full-sized 16-bit AT expansion slots available.

***Lease for as low as $64/month.*
△ *Extended Service Plan pricing starts at $190.*

20 MB VGA Monochrome System $1,699
20 MB VGA Color Plus System $1,999
40 MB VGA Monochrome System $1,899
40 MB VGA Color Plus System $2,199

Prices listed reflect 512 KB of RAM.
†† 640 KB versions of the above systems are available for an additional $80.
100 MB hard drive configurations also available.

**Performance Enhancements (Systems 325, 310, and 316): within the first megabyte of memory, 384 KB of memory is reserved for use by the system to enhance performance. 4 MB configurations available on all systems. Call for pricing.*

THE DELL SYSTEM® 316
16 MHz 386SX.™

Expandable, affordable access to 386 architecture.

STANDARD FEATURES:

- Intel 80386SX microprocessor running at 16 MHz.
- Choice of 1 MB, 2 MB or 4 MB of RAM* expandable to 16 MB (8 MB on the system board).
- Page mode interleaved memory architecture.
- VGA systems include a high performance 16-bit video adapter.
- LIM 4.0 support for memory over 1 MB.
- Socket for 16 MHz Intel 80387SX math coprocessor.
- 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.
- Integrated high performance hard disk drive interface and diskette controller on system board. (ESDI based systems include a hard disk controller.)
- Enhanced 101-key keyboard.
- 1 parallel and 2 serial ports.
- 200-watt power supply.
- 8 industry standard expansion slots (7 available).

***Lease for as low as $98/month.*
△ *Extended Service Plan pricing starts at $234.*

40 MB TTL Monochrome System $2,699
40 MB VGA Color Plus System $3,199
100 MB VGA Color Plus System $3,799
100 MB Super VGA Color System (800x600) $3,899

Prices listed reflect 1 MB of RAM. 150 and 322 MB hard drive configurations also available.

THE DELL SYSTEM® 310
20 MHz 386.

The best combination of performance and value available in its class.

STANDARD FEATURES:

- Intel 80386 microprocessor running at 20 MHz.
- Choice of 1 MB, 2 MB or 4 MB of RAM* expandable to 16 MB (using a dedicated high-speed 32-bit memory slot).
- Advanced Intel 82385 Cache Memory Controller with 32 KB of high speed static RAM cache.
- Page mode interleaved memory architecture.
- VGA systems include a high performance 16-bit video adapter.
- Socket for 20 MHz Intel 80387 or 20 MHz WEITEK 3167 math coprocessor.
- 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.
- Dual diskette and hard disk drive controller.
- Enhanced 101-key keyboard.
- 1 parallel and 2 serial ports.
- 200-watt power supply.
- 8 industry standard expansion slots (6 available).

***Lease for as low as $131/month.*
△ *Extended Service Plan pricing starts at $251.*

40 MB TTL Monochrome System $3,599
40 MB VGA Color Plus System $4,099
100 MB VGA Color Plus System $4,699
100 MB Super VGA Color System (800x600) $4,799

Prices listed reflect 1 MB of RAM. 150 and 322 MB hard drive configurations also available.

THE DELL SYSTEM® 325
25 MHz 386.

When you need a truly high performance 386 computer, this is it.

STANDARD FEATURES:

- Intel 80386 microprocessor running at 25 MHz.
- Choice of 1 MB, 2 MB or 4 MB of RAM* expandable to 16 MB (using a dedicated high-speed 32-bit memory slot).
- Advanced Intel 82385 Cache Memory Controller with 32 KB of high speed static RAM cache.
- Page mode interleaved memory architecture.
- VGA systems include a high performance 16-bit video adapter.
- Socket for 25 MHz Intel 80387 or 25 MHz WEITEK 3167 math coprocessor.
- 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.
- Dual diskette and hard drive controller.
- Enhanced 101-key keyboard.
- 1 parallel and 2 serial ports.
- 200-watt power supply.
- 8 industry standard expansion slots (6 available).

***Lease for as low as $178/month.*
△ *Extended Service Plan pricing starts at $370.*

40 MB VGA Monochrome System $4,899
100 MB VGA Color Plus System $5,799
100 MB Super VGA Color System (800x600) $5,899
150 MB Super VGA Color System (800x600) $6,399

Prices listed reflect 1 MB of RAM. 322 MB hard drive configurations also available.

DISCLAIMER: All systems are photographed with optional extras.

All prices and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. **Payments based on a 36-month open-end lease. †Leasing arranged by Leasing Group, Inc. In Canada, configurations and prices will vary. DELL SYSTEM is a registered trademark of Dell Computer Corporation. Intel is a registered trademark, 386 and 386SX are trademarks of Intel Corporation. △Service provided by Xerox Corporation. Service in remote locations will incur additional travel charges.
©1989 Dell Computer Corporation. All rights reserved.

AD CODE NO. 11DL9

These days, there are literally dozens of 286 systems to choose from.

But in a recent PC Week Poll of corporate buyers, it was the Dell system that was ranked Number 1 for overall customer satisfaction.

Even at the first glance, it's easy to see that two things make our System 210 different from all the rest.

What we put behind it. And what we put in it. Because we build every one of these systems just a little bit differently than everybody else. And we support them like nobody else. With some systems, you can buy an expensive service contract. With others, you're lucky if you get a parent company with a permanent address.

But with our System 210, you get the most complete package of service and support in the industry. And you get it at absolutely no charge.△

To begin with, when you buy from us, we give you a personal account representative. Who gets to know everything about you and your system.

In case you ever have a problem, we back you up with multiple levels of support.

For example, our self-diagnostic software. And our toll-free technical support hotline. Between these two, we can resolve 90% of your problems right away.

And we can take care of the other 10% by the next business day. With every system, you get next-day deskside service, provided by a Xerox Corporation technician.

EVERY GUARANTEE HAS A GREAT COMPUTER BEHIND IT.

One of the reasons we can afford to give you so much support is that our systems need almost no support at all.

We build the System 210 right here in the U.S. We build every system to the highest standard of quality. And we custom configure it to your exact specifications. From the system board up.

And as you can see, we've left nothing out. At $1699, even the most basic configuration gives you 512 KB of RAM, a 20 MB hard drive, and a VGA Monochrome monitor.

Besides the outstanding support we already described, the System 210 also comes with a guarantee you won't find anywhere else: Try it in your office for 30 days. If you aren't completely satisfied —for any reason—send it back. And we'll refund your money. With no questions asked.

EVEN YOUR LEASE PLANS CAN BE CUSTOM CONFIGURED.

Whether you need one system for a home office or thousands of them for corporate headquarters, you can have a lease plan that fits the exact needs of your business.†

Look at the new Power Payment Plan, for example. After 6 to 36 months, when the lease period is over, the system is yours. With a final payment of one dollar. There are no added fees or interest charges. This plan is only available if you lease for your small business or home office.

And now, you can lease our System 210, including a printer, accessories, and two additional years of next-day deskside service. For only $99.95 a month.

Even if you lease thousands of systems, the Commercial Lease Plan offers the same benefits. With terms from 12 to 36 months.

But no matter how your lease plan is designed, every lease is the same as 100% financing. So you don't tie up working capital. Or credit lines. Of course, there can also be tax advantages, as well.

That's just one more reason why you'll find Dell systems in over half of all Fortune 500 companies. And in thousands of small businesses all over the world.

So give us a call. It doesn't matter whether you're looking for the best 286 system, the best price, or the best support plan in the industry.

We'll send you all three. In the same box.

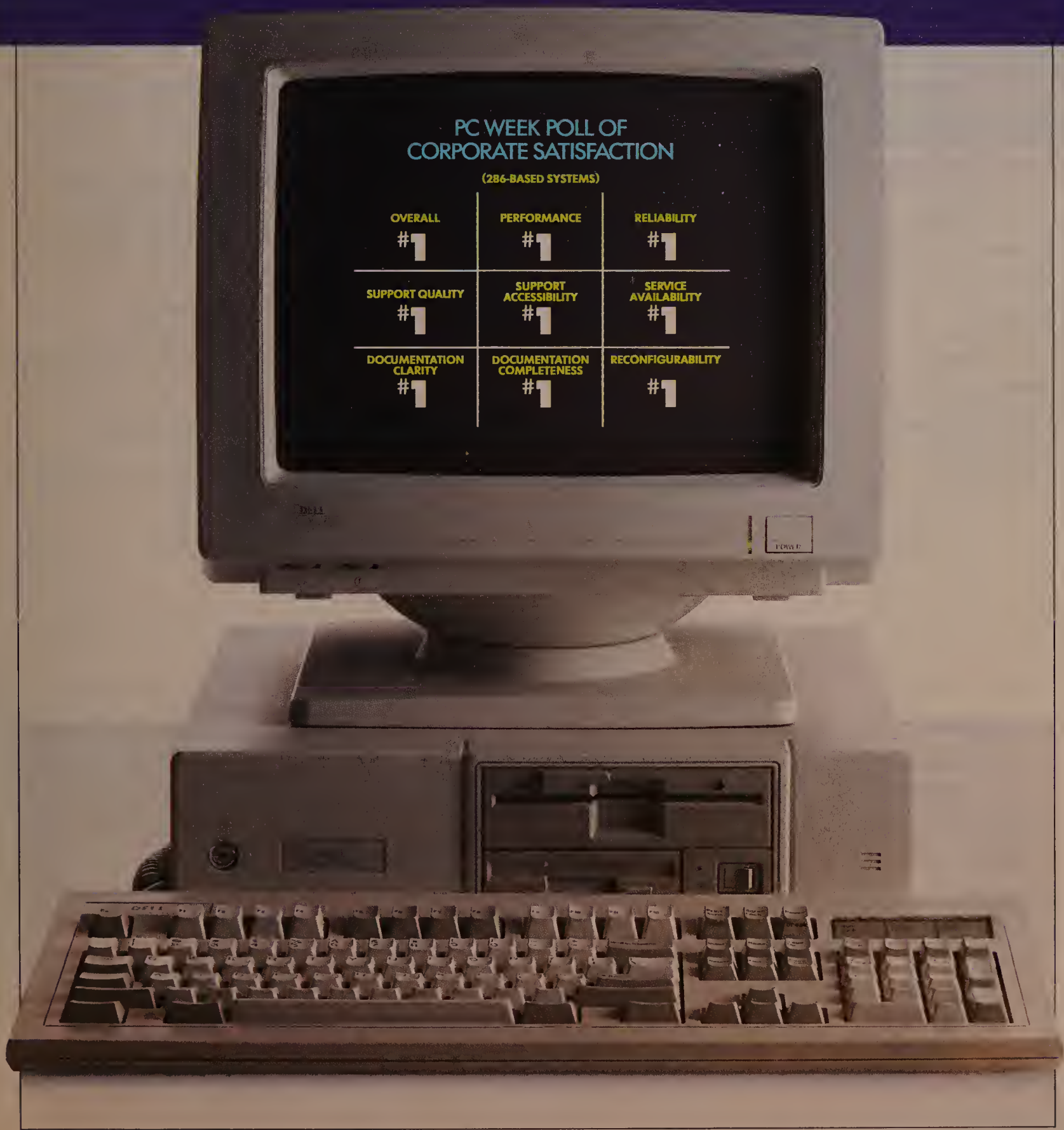
TO ORDER, CALL

800-426-5150

FOR DELL IN CANADA, CALL 800-387-5752

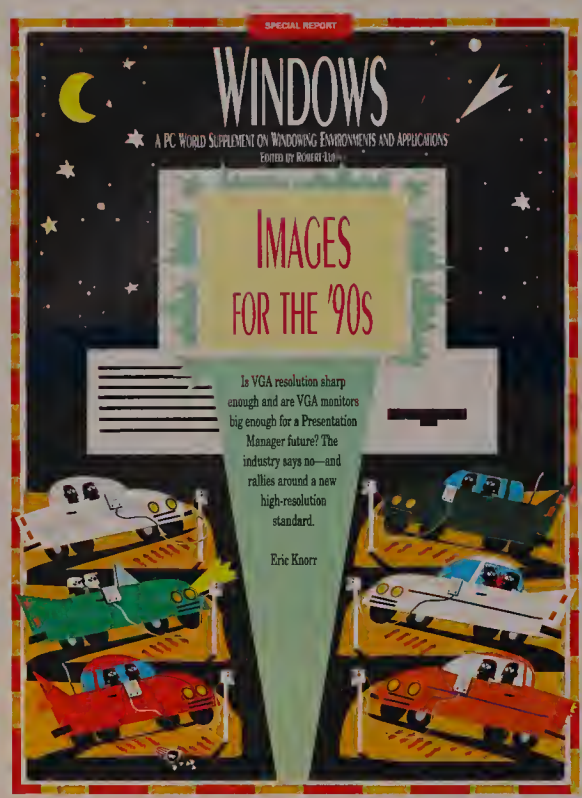
FOR $1699, YOU CAN GET CUSTOM CONFIGURATION, SELF-DIAGNOSTIC SOFTWARE, A 30-DAY MONEY-BACK GUARANTEE, AND NEXT-DAY DESKSIDE SERVICE.

AND A GREAT BOX TO KEEP IT IN.



Circle 74 on reader service card

PC WORLD



SPECIAL REPORT

WINDOWS

174 **Feature**
Images for the '90s
Eric Knorr

177 **Previews**
- *Ami Professional*
- *MicroPhone II*

182 **Reviews**
- *Bridge/386–Toolkit 1.1*
- *Windows Manager 1.0*
- *DeskTop Set 2.01*
- *TaxView 2.00*
- *Superbase 2*

PREVIEWS

78 **The Fox Turns Pro** *Alan Schwartz*
With its character-based windowing interface, *FoxPro* just may be the easiest—and fastest—programmable data manager around.

82 **HP Cuts Cost of Laser Printing** *Michael Goodwin*
Hewlett-Packard builds its own LaserJet clone—at half the speed (and for about half the price) of the Series II.

84 **Improvements in the Works** *William Rodarmor*
Microsoft smooths out the rough edges in its integrated *Works* package.

REVIEWS

116 **Polished Presentations**
Richard Jantz and Michael Smith-Heimer
Turn those raw numbers into persuasive visuals. Our survey of seven business graphics packages uncovers some excellent values.

132 **Gray-Scale Scanners Enter the Mainstream**
Richard Jantz
No longer a luxury, gray-scale scanners can save time and money even if you're not a professional publisher.

152 **The Easy Road to Desktop Publishing**
George Beinhorn
How much publishing muscle can an under-$200 package deliver? These four streamlined DTP programs work wonders with short documents.

160 **No Pain, Big Gains: Five Low-Cost LANs**
Robert Lauriston
Peer-to-peer networks are easy to administer and easy on the pocketbook. If you fit the peer LAN profile, we've found your Best Buy.

NEWS

13 **Top of the News**
Mike Hogan
- NEC unveils color laptop
- Small-footprint IBM laser challenges the Series II
- Upgraded LaserJet language rivals PostScript
- 2.8MB floppy drives debut

69 **Industry Outlook**
Edited by Eric Bender
- Microsoft and IBM ready for assault on PostScript
- Tandy wins some big-name *DeskMate* converts
- Ashton-Tate bloodied but not bowed by *dBASE IV* woes
- Private Eye—a pint-size display with big potential

88 **Product Outlook**
Edited by Mike Hogan
- Dynabook designs a modular, magnesium-cased laptop
- Mitac takes dead aim at IBM's Model 55 SX with its SX-based, Micro Channel–compatible MPS2386
- Bring order to network files with *Saros FileShare*
- Kraft unveils the first trackball that works with a foot pedal
- QMS packs color and PostScript support in a $10,000 printer
- The versatile Hicard keeps Micro Channel memory options open
- SPSS and Ashton-Tate team up with *dBASE STATS* add-on
- Amdek's diskless workstation puts 286 power in a low-cost box
- Open a new window on DTP and engineering jobs with the Cornerstone XL full-page monitor
- Toshiba rolls out a smaller, lighter, cheaper LaserJet clone

108 **Update**
- *Quicken 3*
- Microsoft Mouse 400 Series
- *Corel Draw 1.1*
- Objectworks for Smalltalk-80
- *Lattice C 6.0*

CONTENTS

November 1989
Volume 7, Number 11

FEATURES

194 **Networks Take Center Stage**
Eric Bender
Custom LAN applications are paying off in leaner, faster, more responsive companies, thanks to some behind-the-scenes strategists.

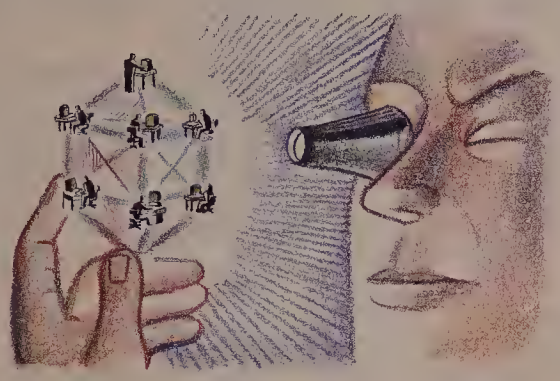
200 **Buyers' Guide: dBASE Helpers**
Matt Lake
We've found more than 30 ways to squeeze extra productivity out of *dBASE III Plus* and its compatibles—without programming.

HOW TO

208 **Easing Into WordPerfect Macro Programming**
Robert Lauriston
Use *WordPerfect 5.0*'s built-in programming language to construct more powerful macros, including one to automate block moves.

212 **Tips & Techniques**
- **Data Management** Flawless Form Letters With dBASE IV
- **Desktop Publishing** Eight Tips for Taming Ventura
- **Communications** Money-Saving Tips for Dow Jones News/Retrieval
- **User Group Tips**

Cover story: Transform dry numbers into power-packed slides and charts, page 116.



Peer-to-peer LANs let you focus on the work at hand, page 160.

Cover photograph by Fred Stimson

PERSPECTIVES

19 **Richard Landry**
Font wars: the latest round in a continuing PC battle.

29 **Letters**
Is the road to MIS tyranny paved with data base servers?

308 **Another Angle**
The software world has its share of endangered species.

DEPARTMENTS

8 **In This Issue**
Scanning the not-so-distant horizons.

49 **The Help Screen**
Karl Koessel
Disk caching, memory caching—what's the difference?

61 **Windows Journal**
Stewart Alsop
Raves for *NewWave*'s object-oriented excellence.

229 **Consumer Watch**
Anita Amirrezvani
Confusion reigns in the dBASE world—here's how to cope.

241 **Star-Dot-Star**
Edited by Tom Swan
An automated backup routine, and CD ROMs that are music to developers' ears.

253 **Network Q&A**
David Ferris
The frustrations of RAM cram for network users.

260 **PC World Catalog**
A convenient buying guide to PC products and services.

282 **Advertisers Index**

284 **Products Featured in Editorial**
More information for *PC World* readers.

285 **PC World Computer Products Shopping Guide**
A handy mail-order shopping guide.

PC WORLD

The Business Magazine of PC Products and Solutions

Richard Landry
Editor in Chief

Editorial
Managing Editor: Ed Bott
Senior Editors: Mike Hogan, Eric Knorr, Robert Luhn
East Coast Editor: Eric Bender
Assistant Managing Editor: Cynthia Brown
Technical Editor: Karl Koessel
Senior Associate Editor: Eric Brown
Associate Editors: Michael Goodwin, William Rodarmor
Copy Chief: Peggy Nauts
Editorial Production Mgr.: Ellyn L. Hament
Editorial Mgr.: Gina Vanlue
Assistant Editors: Rex Farrance, Wesley Nihei, Lincoln Spector, Daniel Tynan, Janet Walden
Senior Copy Editor: Barbara Lewis
Copy Editors: Margaret Berg, Sally Zahner
Lead Typesetter: Mark L. Duran
Editorial Assistants: Matt Lake, Susan Lusty
Administrative Assistants: Nancy Brenn-Lovett, Cathy Smith
Contributing Editors: Stewart Alsop, Anita Amirrezvani, Stephen A. Blumenthal, TJ Byers, Robert M. Carr, Steven Cook, Dennis Dykstra, David Ferris, Judy Getts, Mark Henricks, Richard Jantz, Ted Nace, Richard Scoville, Ralph Soucie, Tom Swan
User Ombudsman: Dan Lavin (617/969-6555)
National Software Testing Laboratories (NSTL): Michael D. Stern (President), Lawrence D. Goldstein (Vice President, Operations), Jim Hurd (Vice President, R&D), Vicki Weiss (Vice President, Testing Services), Charles Vogt (Technical Editor), John Gartner (*PC World* Liaison)

Art and Design
Art Director: Claudia Steenberg
Associate Art Director: Gregory Silva
Assistant Art Director: Robert Kanes
Designer: Emily Burch
Senior Design Associate: Barbara Adamson
Design Associate: Jeffrey S. Glines
Assistant Design Associate: Hope Winslow
Production Artist: Marlene Tobias

Production
Director of Manufacturing: Linda Manes
Assistant Production Mgr.: MaryAnn DePietro
Advertising Billing & Booking Coordinator: Kevin Greene
Advertising Traffic Coordinator: Steven Spingola

Circulation
Circulation Director: Heather Martin
Single Copy Sales Director: George Clark
Single Copy Sales Rep.: Martin Garchar
Single Copy Sales Specialist: Madeleine DiSalvio
Circulation Mgr./Renewal and Billing: Ellen Kaminow
Circulation Promotion Mgr.: Billie Brownell
Fulfillment Mgr.: Doug Norde
Circulation Assistants: Kimberly Scott, Noël White
Administrative Assistant: Ann Lippold

Advertising Sales & Marketing
Mark Glasner
Director of Advertising Sales (415/978-3178)

Northwest Sharon Van Leuven *Western Regional Mgr.* (415/243-0500)
Northern California/San Francisco Natalie Wood (415/243-0500)
San Jose Susan Simmons (415/243-0500)
Southern California/Los Angeles Ron Evangelista (213/312-8008)
San Diego/Southwest/Orange County Fran Cowen (714/250-8081)
Texas Harvey Diamond (214/233-3492)
Eastern U.S.
Eastern Advertising Mgr. Jeff Edman (201/967-1350)
New England/Boston Bob Ostrow *Senior Account Mgr.* (508/820-0440)
Midwest/N. Chicago Robert Diftler *Midwest Regional Mgr.* (312/827-4477)
Mid-Atlantic/Manhattan Carolyn Casey (201/967-1350)
Southeast/Atlanta Judy Sutter *Senior Account Mgr.* (404/394-0758)
PC World Catalog Sharon Van Leuven *Catalog Advertising Mgr.*, Greg Messina, Sandie Wade (800/435-7760 in California, 800/435-7766 outside California)

Colette Cornish
Advertising Coordinator (415/978-3259)

Marketing & Research
Director of Marketing & Research: Vance Wadleigh
Marketing Director: JoEllen Bokar
Direct Marketing Mgr.: Ben Delaney
Marketing Communications Coordinator: Amy Marks
Research Assistants: Bill Segovia, Scott Shores
Marketing Assistant: Kelli Urauchi

Administration
Human Resources Mgr.: Harriet Holbrook
Corporate Business Mgr.: Christina Spence
Information Systems Mgr.: Walter J. Clegg
Accounting Mgr.: Pat Murphy

Corporate
PCW Communications, Inc.

John Griffin
President & Publisher

Cheryl Woodard
Research Director

Vicki Peilen
Director of Finance

David Bunnell
Founder

Andrew Fluegelman
1943-1985
Founding Editor

HOW TO CONTACT PC WORLD

Comments, criticism, suggestions, and complaints are always welcome. Send correspondence to *PC World*, Editorial Dept., 501 Second St., San Francisco, CA 94107. You can reach us electronically via MCI Mail PCWORLD/179-3813, CompuServe 74055,412, or facsimile at 415/442-1891.

Subscription Services If you have subscriber service questions, call toll-free 800/234-3498 (303/447-9330 in Colorado) or write Subscriber Services, P.O. Box 55029, Boulder, CO 80322-5029. To place new orders call 800/825-7959.

Help With Your Computer or Software Do you have any questions about the IBM PC or compatibles? Send them to *The Help Screen* at the address given above or electronically to MCI Mail Karl Koessel/336-4141. Do you have a business problem of general interest? Send your PC-related questions to the address given above, c/o *Tips & Techniques*. Address your network-related questions to the same address, c/o *Network Q&A*. Questions with the broadest interest will be answered in the magazine. Sorry—we can't acknowledge individual letters or offer advice over the phone.

Product Information We're always interested in new products for our news and review sections. Send press releases and product announcements to Rex Farrance, assistant editor (software), or Janet Walden, assistant editor (hardware), at *PC World*, 501 Second St., San Francisco, CA 94107, or electronically to MCI Mail PCWORLD/179-3813 or CompuServe 74055,412.

Editorial Calendars To receive a copy of *PC World*'s Editorial Calendar, call your nearest regional *PC World* advertising sales office.

Reprints and Permissions You must have our permission before reproducing any material from *PC World*. If you want to quote from or reprint any portion of an article or use artwork or photographs that have appeared in the magazine, send a written request to *PC World*, Reprints and Permissions, 501 Second St., San Francisco, CA 94107. Include your phone number if you need a fast response.

Writing for PC World *PC World* encourages reader submissions. For a copy of our writers' guidelines, send a self-addressed stamped envelope to the address given above. Manuscripts may be mailed, or sent electronically.
Letters. Letters should be mailed to the address given above, c/o *Letters*. All letters must include the writer's name, city, and state. They should not exceed one double-spaced typewritten page. We reserve the right to edit letters.
Star-Dot-Star. We pay $25 to $200 for each item published in *Star-Dot-Star*. Send your PC discoveries to the address given above, c/o *Star-Dot-Star*. All published submissions become the property of *PC World* and are subject to editing for length and style. Due to the volume of mail, we cannot acknowledge any submitted materials. Accepted contributions will be acknowledged by payment.
The Upgrade Path. Manufacturers offering hardware upgrade products, and readers with submissions or queries, should write to *The Upgrade Path* at the address given above.
Power Tips and User Group Tips. Have you discovered a timesaving technique for increasing PC productivity? Share it with other readers. Send your tips to the address given above, c/o *Power Tips* or *User Group Tips*. Keep submissions to 100 words or less; we'll pay $25 for each tip published.
Consumer Watch. Think you've gotten a raw deal? Send the details to *Consumer Watch* at the address given above. We'll investigate your complaint; letters with the broadest interest will be published.

PC World™ (ISSN 0737-8939) is published monthly at $29.90 for one year (12 issues), $59.80 for two years (24 issues), $89.70 for three years (36 issues) by PCW Communications, Inc., 501 Second St., San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add $18 per year for Canada and Mexico; add $25 per year for surface mail or $110 per year for airmail for all other countries. Second-class postage paid at San Francisco and additional mailing offices. POSTMASTER: Send address changes to *PC World*, Subscription Dept., P.O. Box 55029, Boulder, CO 80323-5029. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0500; CompuServe 74055,412; MCI Mail PCWORLD/179-3813. *PC World*™ is an independent journal, not affiliated in any way with International Business Machines Corporation. IBM is a registered trademark of International Business Machines Corp.

Copyright © 1989, PCW Communications, Inc. All rights reserved. The following are trademarks of PCW Communications, Inc.: PC World View, *.*, PC World. *PC World* is a publication of IDG Communications, the world's largest publisher of computer-related information.

DURING ONE LUNCH HOUR 30 NOVICE DOS USERS LEARNED TO DO ALL THIS.

- ORGANIZE PROGRAMS INTO ONE MENU.
- MOVE FIVE DIRECTORIES FROM ONE PLACE TO ANOTHER.
- FORMAT TWO FLOPPY DISKS.
- COPY A FLOPPY INTO A NEWLY CREATED DIRECTORY.
- DETERMINE THE FREE SPACE ON A DISK.
- DETERMINE THE SIZE OF ALL DIRECTORIES.
- DELETE THREE ENTIRE DIRECTORIES.
- START PROGRAMS WITH A SINGLE KEY-STROKE.
- CREATE A VOLUME LABEL ON A FLOPPY.
- CHANGE THE DATE AND TIME ON THE COMPUTER.

(OVER)

AND STILL HAD

THE ONLY DOS THEY HAD TO KNOW WAS A: INSTALL

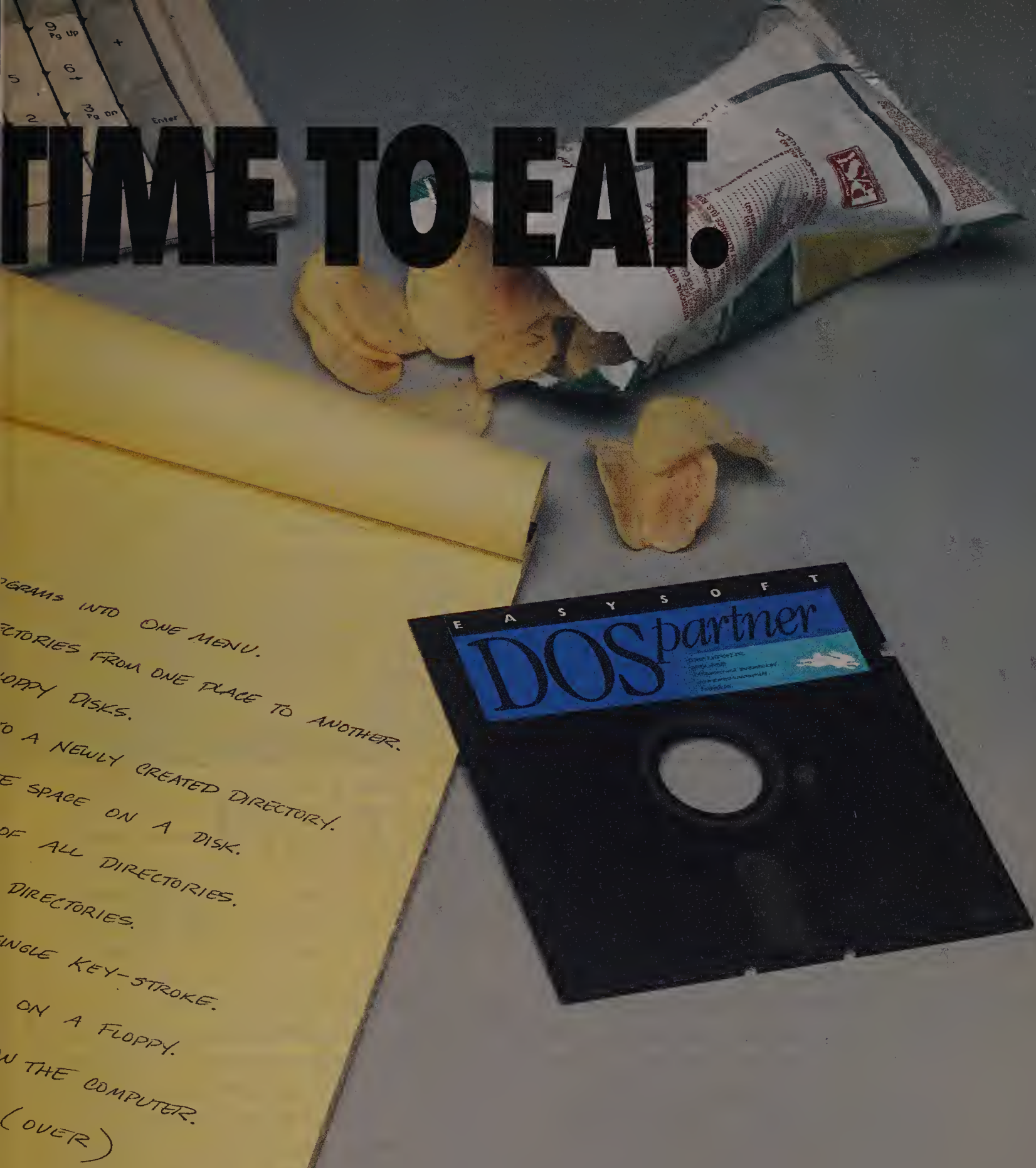
The 30 novice PC users installed DOS Partner,™ EasySoft's new integrated shell and file management program, reviewed the documentation, and within minutes, were performing tasks that typically require weeks or months of DOS training and experience.

Tasks like moving an entire directory, with multiple subdirectories, from one hard drive to another. Using only DOS, the task of moving this directory took an experienced programmer nine minutes. It took novice users an average of only 30 seconds to move the same directory with DOS Partner.

DOS PARTNER MAKES DOS INVISIBLE

DOS Partner is not like shells that still require you to know DOS. It allows you to ignore DOS altogether. DOS Partner manages all your files, directories and applications. And it provides you with other functions unavailable in DOS. You can even delete entire directories, with associated subdirectories and files still in them.

TIME TO EAT.



You and your PC speak plain English to ach other. So you never run into dead ends, ad command messages or syntax errors. OS Partner shows you all your options on e screen. If you want to move, copy or elete a directory or a file, you simply move our cursor to the English command and ress enter. It's that simple.

DOS PARTNER CAN ELIMINATE DOS TRAINING

If your company is like most, it's spending 300.00 in support and training for every 100.00 it spends on software and hardware.

With DOS Partner, you'll never have to sit through another DOS class or remember another DOS command. So it saves you and your company time and money. To order your copy of DOS Partner, call EasySoft at 1-800-526-6201. For $99.00, you can organize and operate your PC more productively than ever. And if you find that within 30 days it hasn't made your work easier – then send it back for a complete refund. Guaranteed.

TO ORDER NOW, CALL 1-800-526-6201

EASYSOFT,INC. All major Credit Cards Accepted. Allow 2-4 weeks for delivery. Add $4.95 shipping and handling. Residents in some states may need to add sales tax. Inquiries, call (404) 992-3808. © Copyright 1989 EasySoft, Inc. All rights reserved. DOS Partner, & rabbit logo are trademarks of EasySoft, Inc.

Scanning the Horizons

ROBERT CARDIN

Contributing Editor Richard Jantz

Lately, we've noticed a welcome trend in business computing: What were once expensive tools for specialists are becoming affordable resources for all sorts of users. It's happened with desktop publishing software and with PostScript printers. Is it time to add gray-scale scanners to the list?

Until recently, publishing professionals like Contributing Editor Richard Jantz made up the market for scanners. With his background as magazine editor, book publisher, freelance writer, and author of a pair of desktop-produced books on *Ventura Publisher*, Jantz has had ample opportunity to put image scanning technology to good use.

These days, though, scanners are attractive for a lot more applications than desktop publishing, says the author of this month's roundup review, "Gray-Scale Scanners Enter the Mainstream." Scanned images are still a tremendous low-cost alternative to conventional halftones. But as they've become cheaper and more versatile, scanners have been transformed from an expensive novelty into a nearly essential business tool. In fact, Jantz contends, "it's hard to imagine the average businessperson *not* wanting to invest in a scanner today."

One obvious incentive is dollars and cents. In the past year, Jantz reports, prices have tumbled. "Today, you can pick up a top-quality scanner for a street price of around $2000. That's about half what it was just a couple of years ago."

A much more powerful inducement is the sheer versatility of the latest generation of scanners. "Even if you just buy one to scan in some company artwork you've commissioned in the past, you'll probably come out ahead," says Jantz. "But you can also use a scanner for optical character recognition. There's an emerging technology to do raster-to-vector conversions, which will allow you to move images into other programs, like *AutoCAD*. You can even use scanned images with a data base—to store, say, pictures of all your employees."

Given the march of technology and the steady decline in prices, does it make sense to wait a little longer before springing for a scanner? Jantz doesn't think so. "When prices fall too low, buyer beware. Gray-scale scanners come in different flavors, so you have to be sharp about what you buy. The difference between a 4-bit scanner and an 8-bit scanner, for example, is profound. The compatibility issue is likely to raise its head as well."

You may feel that your business isn't quite ready to take advantage of gray-scale scanning. But after you read Jantz's review, we won't be surprised if you start looking for a little extra room on the desktop. ●

Ed Bott

Ed Bott
Managing Editor

House. Senate.

We found a measure they could both agree on.

Up on the hill it looked like another split along party lines. Both Macintosh and PC users fought for access to the same information. Until a TOPS network brought them together in bipartisan agreement, that is.

Maybe that's why TOPS has been voted the de facto standard for easy Mac-to-PC connectivity by some 600,000 users. All you have to do is install TOPS software in each Macintosh and PC on the network, add a network card to each PC, and you've got a quorum.

A polished diplomat in any arena, TOPS easily trades data from Lotus 1-2-3 to Excel, Microsoft Word PC to Word Mac and most other Mac and PC applications. And if you're looking to discuss the issues with other networks and systems, such as Novell, AppleShare, and Sun NFS, TOPS provides the perfect forum.

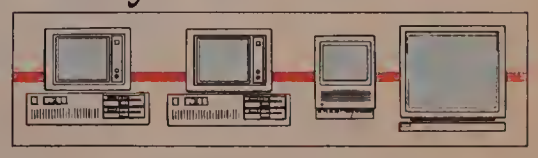
No wonder, when it comes to making connections, TOPS is the people's choice. Call the TOPS Division of Sun Microsystems at 1-800-445-TOPS, ext. 305.

TOPS Tech Specs

- TOPS supports AppleTalk and FlashTalk running on twisted-pair cabling (telephone wire), and EtherTalk on thick or thin Ethernet cabling.
- All IBM PCs, PS/2 Models 25 or 30, or compatibles require TOPS FlashCard, 3Com EtherLink II or Western Digital EtherCard Plus. PS/2 Models 50 through 80, or compatibles require 3Com EtherLink/MC card.
- TOPS can be configured as a distributed, dedicated, or combination server network.

TOPS®

When you need connections.



From outside the U.S. and Canada, call TOPS at 1-415-769-8700, ext. 305. Or write to TOPS, 950 Marina Village Parkway, Alameda, CA 94501. For information on European distribution, call 44 276 51440.

sun microsystems

Copyright © 1989 Sun Microsystems, Inc.

"When Fosberry said a PS/2 with Micro Channel would let him juggle ten things at once and still have time to break for lunch, he meant it."

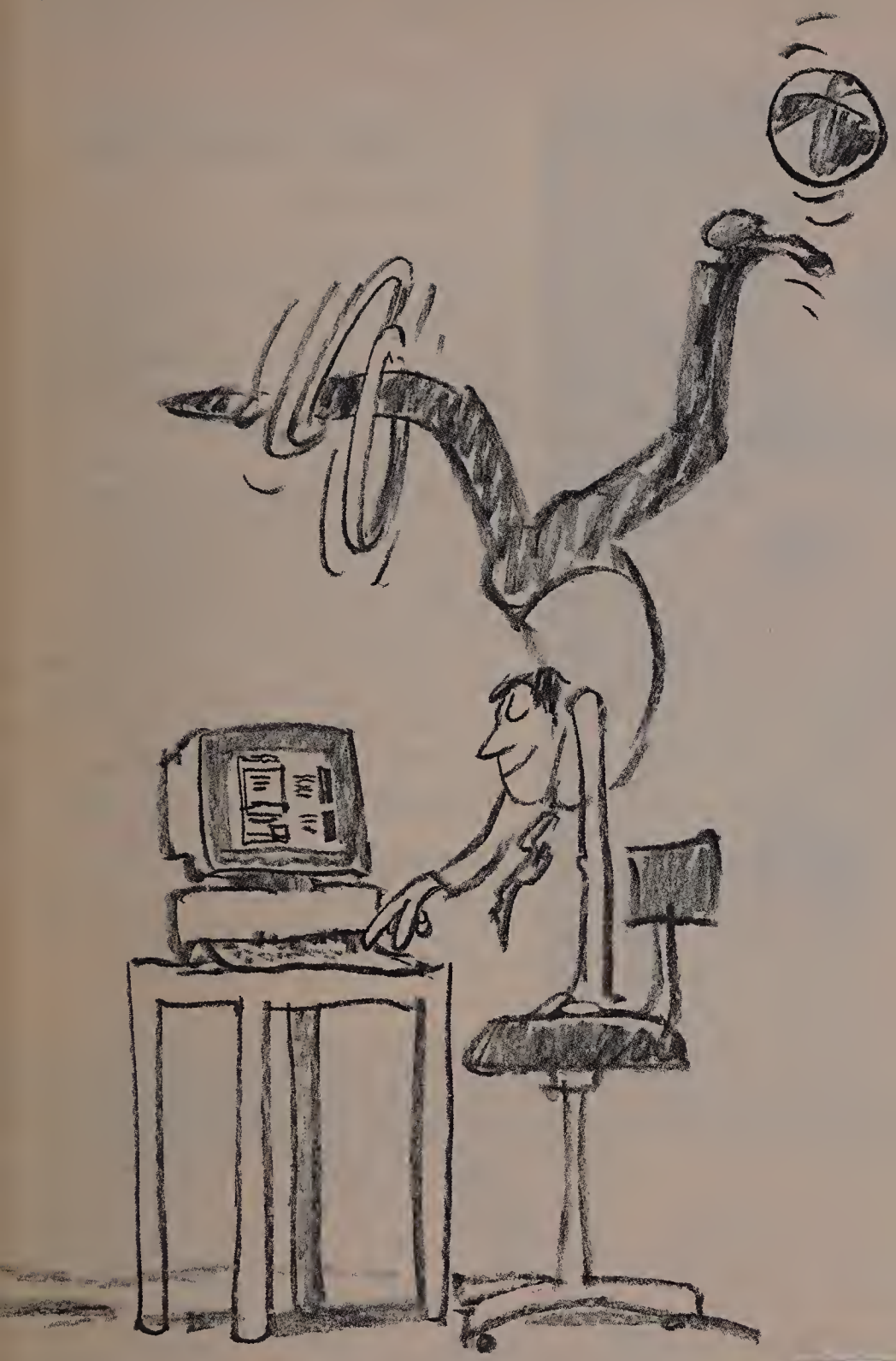
How're you going to do it?

These days, no matter what size your company, you've got to be able to keep a lot of balls in the air to stay competitive.

The Genius Of Micro Channel. Which is why IBM developed the Personal System/2® with Micro Channel.™ Micro Channel can support multiple operating microprocessors. So you can, for example, separately manage peripherals, while freeing up the main processor to crunch numbers. A bus master can even be sending a fax while another manages traffic on a network, all with greater reliability.

Naturally, every PS/2® with Micro Channel runs DOS and OS/2.™ So with OS/2 Presentation Manager,™ you can do multiple tasks concur-

IBM, Personal System/2 and PS/2 are registered trademarks and OS/2, Presentation Manager and Micro Channel are trademarks of International Business Machines Corporation. © 1989 IBM Corp.



PS/2 it!

rently, all with an easy-to-use graphical interface. What's more, with Micro Channel, there are no DIP switches to set, for simpler, more reliable installation. You can find and reset cards anywhere in the network—right from your desk!

The Solution Is IBM. So, to manage lots of information, jobs, hardware and software, invest in the PS/2 with Micro Channel. Contact your IBM Authorized Dealer or IBM marketing representative. For a dealer near you, call 1 800 IBM-2468, ext. 142. You'll learn there's almost nothing you can't do if you PS/2 it!

IBM®

Vincent Van Gogh and Princeton Monitors.

Van Gogh's "Sunflowers."
Impassioned. Intense. Very Expensive.

Princeton monitors. Impassioned.
Compatible. Not very expensive.

For further information call:
800-342-6962

Princeton Looks Better.

PRINCETON®
GRAPHIC SYSTEMS
A WORLD-WIDE TECHNOLOGY COMPANY

1100 Northmeadow Parkway, Suite 150, Roswell, GA 30076 USA /
Norfolk House, GT. Chesterford Court, GT. Chesterford, Saffron
Walden, Essex CB 101PF England (44) 0799 30963

Watch World-Wide Technology (NASDAQ:WOTK)
Grow World Wide!

Circle 221 on reader service card

Intense color and impassioned brushstrokes are the trademarks of paintings created by Vincent Van Gogh.

"Sunflowers," shown here on the Princeton Graphic Systems ULTRA-14 monitor, like many of his flower studies, is a deliberate experiment in precise form and the use of color variations.

Intense and impassioned colors also characterize Princeton color monitors. Princeton Graphic Systems monitors offer superior resolution – up to 1024 by 768 – and the widest multi-synchronous frequency range available. Perfect for everyday business graphics or the most demanding imaging application.

Completely compatible with all models of IBM (EGA, VGA, VGA+, 8514/A), Apple Macintosh (II, SE) and compatible computers.

7/89 © 1989 Princeton Graphic Systems

Color Laptop Ships

NECHE Shows 386SX-Based Portable: The First Small Step for Color

NEC Home Electronics heralds a new era in portable computing this month by introducing the first color laptop—and at a relatively affordable price. For $8499, the 16-MHz, 386SX-based ProSpeed CSX offers a standard configuration of 2MB of RAM, one 3½-inch floppy, and a 28ms 42MB hard drive. A 23ms 100MB ESDI hard drive and a 2400-bps modem are available for about $1100 and $600, respectively. The ProSpeed CSX's 80-column-by-25-line display measures about 10 inches diagonally and is powered by an on-board VGA controller that can drive an external monitor at VGA resolution. However, the laptop display's maximum resolution is only 640 by 350 with 16 colors in graphics mode, and 640 by 400 in text mode. Rather than use active-matrix technology, which produces crisp images at a high price, NECHE settled on a less costly multiplexed twisted-nematic display, enhanced to reduce color blurring. "The CSX is not the be-all and end-all of color," explains Tom Martin, vice president of NECHE's computer business unit, "but we wanted to introduce a color screen early on in order to establish realistic expectations among customers and to begin production of color screens in quantity so that we could bring the cost down." The 18½-pound CSX costs only $2000 more than monochrome versions of the ProSpeed. Because of the color display's power requirements, the clamshell-shaped computer is not battery operated.

IBM Shows New Laser

10-ppm Device Slightly More Functional Than LaserJet, Much Cheaper to Run

IBM introduced a laser printer this month that's faster, smaller, and cheaper to operate than Hewlett-Packard's 8-ppm LaserJet Series II. The question is, has HP anticipated such moves and undercut the competition? The 10-ppm IBM LaserPrinter 4019 matches the Series II's $2695 list price but is 40 percent smaller. Its $199 combined print drum/toner cartridge has a 10,000-page life, giving it a per-page consumables cost of roughly 2 cents, compared with 3 cents for the Series II. And the IBM label automatically gives Big Blue's corporate sales force an edge even over HP, says Dataquest's John Boldt. "There are just an awful lot of Blue companies." But it may be tougher sledding among non-Blue shops; HP accounts for about 70 percent of all laser sales, and it long anticipated the spate of laser introductions this fall. As a countermeasure, HP is redefining the market by bracketing the general-purpose Series II with the 8-ppm IID work-group printer and the 4-ppm IIP personal printer—both very aggressively priced (see *Top of the News, PCW,* October 1989). The IIP is likely to sell for under $1000 on the street, and many of its features surpass those of the Series II. The IBM 4019's price and feature set stack up well against the Series II, but as a personal printer, it may just end up competing at retail with an HP LaserJet IIP that is half its street price.

Speedo Debuts

Bitstream's New Technology Speeds Font Scaling, Reduces Memory Demands

Bitstream has developed a new add-in font-rendering technology called Speedo that promises to bring fast, scalable fonts to users of popular DOS software. Bitstream president Rob Friedman says that software developers who license Speedo can embed it directly in their programs. Users will simply select a typeface and point size from an application's menu and watch the font build on screen almost immediately. For example, Speedo can build a 12-point Swiss font at EGA resolution at a rate of 115 characters per second on a standard 286-based computer. The faster the processor and the smaller and less complex the font, the faster the font displays. Users can also create some PostScript-like effects such as mirroring and rotated text. Speedo saves disk space since it stores only a 30K-to-60K font-outline master rather than the fonts themselves. When the user needs a font, Speedo generates it on the fly. Speedo itself adds only roughly 20K to the size of an application. Approximately 15 software developers are working with the technology. One of the first to market is the newest version of *Designer,* Micrografx's draw package, introduced at the Seybold Computer Publishing Conference last month. "It's fast, well coded, and efficient," says Micrografx chairman Paul Grayson. "We think it's a great technology and went to a lot of trouble to get it into *Designer 3.0.*" How well screen display matches printer output will depend on the developer, says Friedman.

PCL Upgraded

HP Plans Poor Man's PostScript, Adds PostScript Cartridges

Seeking to cement its leadership in the laser printer markets, Hewlett-Packard is not only launching the downsized $1495 LaserJet IIP (see this month's preview) and PostScript cartridges but is also upgrading the LaserJet standard Printer Command Language (PCL). The new PCL Level 5 will take users a step closer to the graphics and font-scaling capabilities of Adobe's PostScript page-description language. Due out early next year, PCL Level 5 will add support for Compugraphic's scalable fonts and for HP's HPGL plotter language. PCL 5 will be backwardly compatible with packages written for today's LaserJets. The IIDs also will accept a $995 PostScript cartridge containing 35 Adobe fonts. Over a year ago, HP decided to make the LaserJet a "universal peripheral that connects to many platforms," explains Product Marketing Manager Cathy Lyons. Though HP and Adobe hadn't seen eye to eye earlier, "market pressure forced the two companies to work toward a mutually agreeable solution," says Lyons. HP's moves aim to forestall marketing pressure of another kind—IBM, Toshiba America, and Epson, among others, are making major pushes into the LaserJet-compatibles arena this fall. Moves like the IID's aggressive pricing, says Lyons, send a message to rivals: "This is a high-stakes game, and it's going to cost you a lot of money to play." As one analyst remarks, "It will be a battle of bull elephants."

Floppy Capacity Rises

First Models of New High-Density Floppy Standard Go On Sale

This month, several vendors will begin shipping high-density drives capable of reading and writing 2.8MB of data on 3½-inch barium-ferrite floppies. Dealers will be provided with external 2.8MB drives with a controller and software for $499 from Pacific Rim Systems of Hayward, California, and for $449 from Micro Solutions of De Kalb, Illinois. Pacific Rim will use drives from Y.E. Data, while Micro Solutions will use Teac drives. Toshiba Corporation, expected to be a major supplier of both drives and media, is shipping samples to OEM customers, with quantity deliveries planned for the first quarter. The floppy disks, expected to retail for about $10 each, may be scarce for a while but will be available from the disk drive suppliers and retailers. The higher-density drives will read standard 1.44MB disks, but the reverse won't be true. Still higher capacity media has been discussed—notably, a long-delayed 21MB-plus drive from San Jose's Brier Technology (see January's *Top of the News*), which uses preformatted versions of the same barium-ferrite media. But the 2.8MB drives stand a better chance of becoming the next industry standard because they represent an incremental upgrade and don't require preformatted media, claims Pacific Rim director of marketing Roger Peters. Interest in the drives is being spurred by the increase in laptop sales and by rumors that IBM plans to introduce a computer with a high-density drive sometime this fall.

Wang to Sell PCs

Troubled Mini Giant Makes a Run at PC Business With Inexpensive Systems

Professing renewed interest in the microcomputer market, Wang Laboratories has introduced four PCs that it plans to sell retail. The $3 billion mini vendor is shipping 16-MHz and 20-MHz 286 computers and two 16-MHz models using Intel's 386SX—one with a standard AT-style bus and one with IBM's Micro Channel. Peter Berkel, in charge of Wang Labs' PC group, hopes that attractive discounts and better service and financing arrangements will double Wang's current complement of 100 dealers over the next year. The systems themselves are aggressively priced; the Micro Channel–equipped MC 350/16S with 2MB of memory, a 28ms 40MB hard drive, and five available slots sells for $900 less than IBM's $3895 55 SX, which has only three slots and a 39ms 30MB drive. Other Wang assets include unique software that lets users combine images, data, and voice. But noting Wang's formidable competition, International Data Corporation PC analyst Bruce Stephen is skeptical. "They aren't a major player, haven't been for a couple of years, and the customer confidence level is way down," Stephen says, referring to the $375 million loss for the fiscal year ended June 30 that forced the resignation of former president Fred Wang and a restructuring of the entire company. The company, which has something of a checkered history in the PC market, does boast 400,000 PCs installed as workstations for its VS minis. ●

Finally ...

Page Recognition For all of us

Introducing ReadRight 2.0

- Reads any text font
- Supports any scanner
- Outputs any format

ReaDRIght 2.0
caN reaD ThiS
aCcuRAteLy

See us at
COMDEX/Fall '89
November 13–17, 1989
Riviera Hotel
Las Vegas, Nevada

ReadRight 2.0: The Next Generation of Document Recognition

ReadRight 2.0's intelligent approach to page recognition is a result of 20 years of experience in advancing the state of the art. As a result, ReadRight 2.0 can actually outperform recognition products that require expensive add-on hardware. The cost of power?—less than $500.

Maybe that's why ReadRight is the world's best-selling recognition software for PC's.

800-233-4627

OCR Systems, Inc.
1800 Byberry Rd. Suite 1405
Huntingdon Valley, PA 19006

Reads Your Document

- Reads most documents, including typewritten and typeset
- Reads small, large, proportional, kerned and touching characters, even with fonts mixed on a page or a line
- Reads documents containing text and graphics
- Tolerates skewed (crooked) text
- Reads complex layouts, including multiple columns and tables

Runs on Your PC

- Runs on any IBM compatible PC with 640K memory, with no additional hardware or memory required
- Supports all popular scanners and image formats, even images from fax cards or hand held scanners

For Word Processor Users

Uses word processor format codes to reproduce the appearance and layout of the original document:

- Bold/underlined text
- Point size, serif/sans serif typefaces
- Tabs, indents, columns, lists, paragraphs

Meets Your Needs

- Works without being trained to recognize your fonts
- Requires minimum keystrokes with ReadRight 2.0's simple menu structure
- Replicates appearance of original document, including character size and page layout
- Support your word processor, desktop publisher, spreadsheet or database software directly
- With just three keystrokes, accesses your application, so you can use your document
- Executes directly from DOS command line

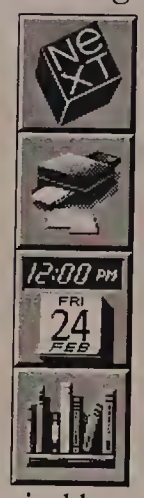
OCRSYSTEMS

Copyright ©1989 OCR Systems, Inc. All rights reserved. ReadRight is a registered trademark of OCR Systems, Inc. IBM is a registered trademark of International Business Machines Corporation.

Circle 199 on reader service card

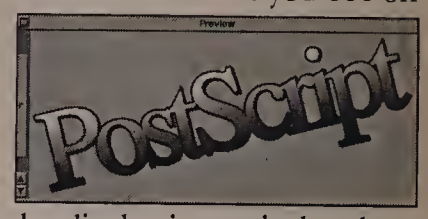
1 The NeXT™ Computer System is the first computer in the world (and so far the only) to use read/write/erasable optical storage. While PCs today are typically equipped with Winchester drives that store 20 to 40 MB, a single optical disk can store 256 MB. Plus, it is removable, for portability and added security. This dramatically new technology provides storage that is simultaneously vast, reliable and cost-effective—a combination unmatched by computers of any size.

2 NeXT has made the power of UNIX® usable by mere mortals. UNIX is the high-performance operating system used by workstations to achieve true multitasking and superior networking. Unfortunately, it has always been the antithesis of user-friendly. NeXT has given UNIX a revolutionary new interface—one that is both visual and intuitive. Now computer users of every level can instantly wield this tremendous power, with no technical knowledge whatsoever.



3 To achieve the power needed for the 90s, NeXT bypassed traditional workstation architecture and went directly to that of a mainframe. This eliminates bottlenecks and attains an extraordinary level of system "throughput"—the true measure of computer performance. Only through the use of VLSI (Very Large Scale Integration) technology could this architecture be reduced in size so that it could fit inside a desktop computer. It's a mainframe on two chips.

4 While PostScript® has long been the industry standard for printing, NeXT has made it fast enough to also be used on the display. This "unified imaging model" ensures that what you see on the display is precisely what you will get on paper. All your work, in any size type and any degree of rotation or magnification, appears with perfect 92-dots-per-inch clarity on the NeXT MegaPixel Display. And with laser precision at 400 dpi on the NeXT Laser Printer.

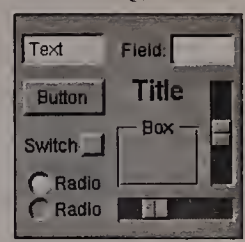


IN THE 90s, WE'L
ONLY TEN REAL BREAKTH
HERE ARE SEV

5 The NeXT Computer System is the first to be capable of producing CD-quality sound. Without requiring any additional equipment. This feat is made possible by a chip that has been specifically designed for the task of manipulating sound—the Digital Signal Processor (DSP). Because this processor is standard in every NeXT machine, software developers will be able to call upon its power to enrich programs we use every day. Now computers will not just be seen, but heard.

6 NeXT Mail takes electronic communications beyond anything you've seen on a personal computer before. Now you can send and receive multimedia mail—including text (with varied type fonts, styles and sizes), graphics and voice messages. And despite its high level of sophistication, NeXT Mail is so intuitive, you may not ever need to open the manual. NeXT Mail is built into the system, along with Ethernet and TCP/IP, so the NeXT machine can quickly become a part of existing networks.

7 Programmers can create software on the NeXT Computer up to ten times faster than on any other computer—the result of a breakthrough called NextStep.® It gives software developers the power to create the graphical user interface portion of their applications (often the most time-consuming and difficult part) without any programming at all. This revolutionary environment means we will see more programs, and better ones, in less time than ever possible before.



These seven breakthroughs will change the way we use computers in the 90s. Which is why Businessland, the leading supplier of computers to corporate America, chose the NeXT Computer System as the workstation they will offer. Call us at 800-848-NeXT, and we'll send you a 28-page brochure describing the NeXT Computer. We'll also give you the address of your nearest Businessland Center. There, you can experience for yourself the first seven breakthroughs of the 90s. And get a good idea where the next three will come from.

L PROBABLY SEE ROUGHS IN COMPUTERS. EN OF THEM.

© 1989 NeXT, Inc. NeXT is a trademark of NeXT, Inc. NextStep is a registered trademark of NeXT, Inc. PostScript is a registered trademark of Adobe Systems, Inc. UNIX is a registered trademark of AT&T.

D E S I G N E R S • O N • D E S I G N E R

GERARD KUNKEL

AGE: "31, last March."

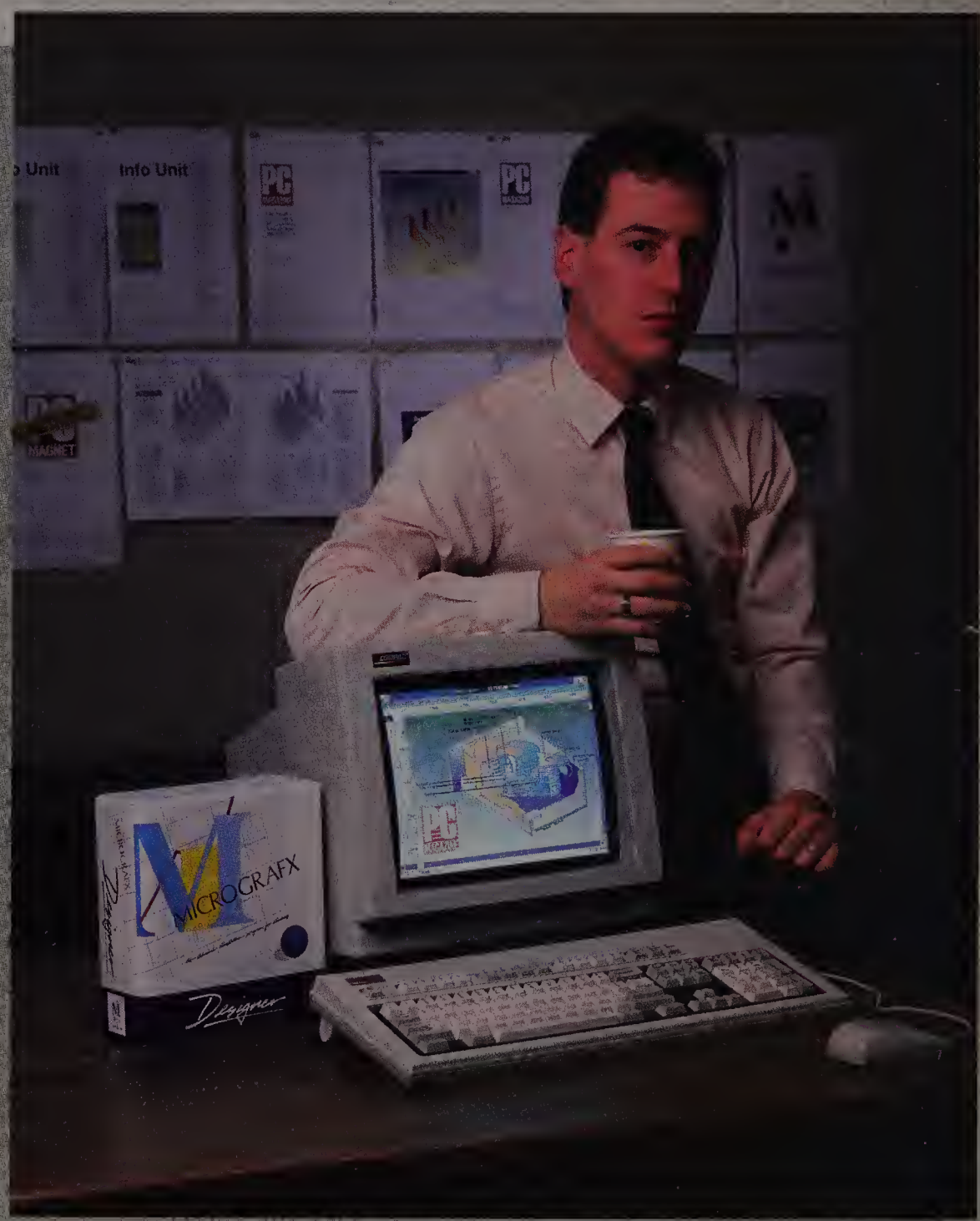
PROFESSION: Artist & Designer. Director of Design & Electronic Publishing, *PC Magazine.*

CREDITS: Gerard's designs, both traditional and electronic, have graced publications from *Personal Computing* to *Business Week.*

LATEST PROJECT: Author of *Graphic Design in PostScript,*® published by Scott, Foresman & Co.

ON PUBLISHING: "Electronic design gives you the ability to explore all of your ideas quickly. It's tools like Designer that make that possible *and* practical."

ON SOFTWARE: "Graphics are a vital part of any design. We see Micrografx Designer as an integral part of our total electronic design solution."



Gerard Kunkel, Director of Design & Electronic Publishing: Designer user

Micrografx Designer, winner of the PC Magazine Technical Excellence Award, Graphic Software, 1988

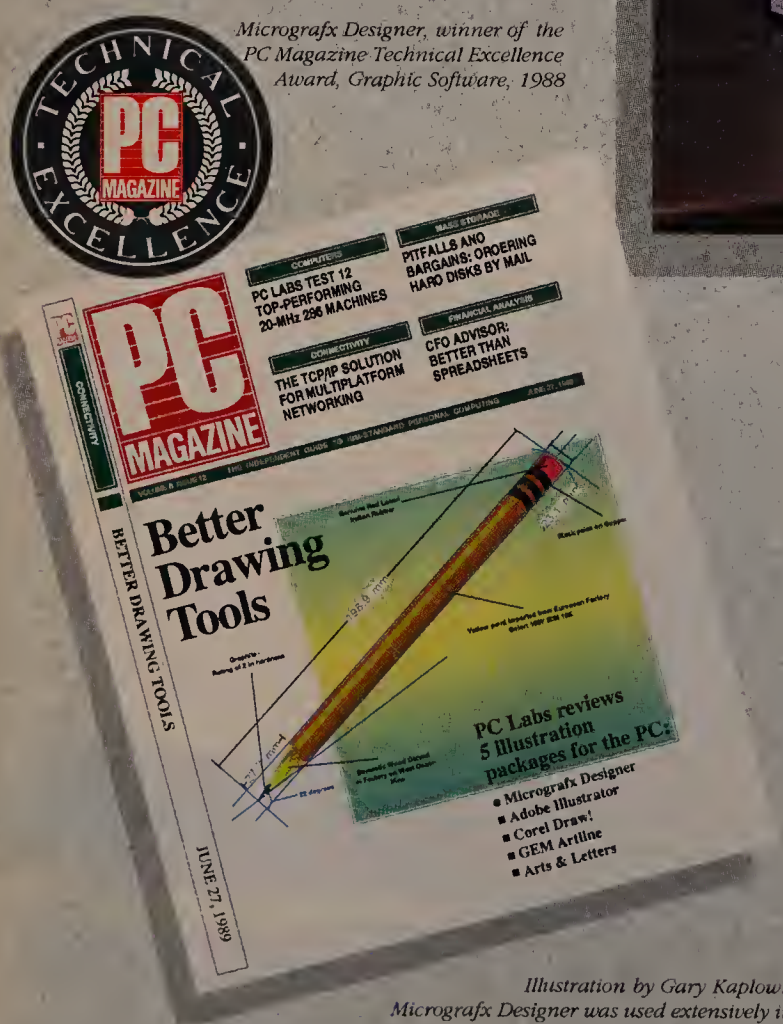


Illustration by Gary Kaplow. Micrografx Designer was used extensively in producing PC Magazine's new look. Many of the illustrations in this issue were done with Designer.

Join the 50,000 illustrators, graphic artists, art directors, desktop publishers, and technical draftsmen who have made Micrografx Designer™ their choice in graphic design software. Call Micrografx today at **800/272-3729** for a self-running demo.

MICROGRAFX®

1303 Arapaho • Richardson, TX • 214/234-1769 • 800/272-3729
Surrey House • 34 Eden St. • Kingston, Surrey • UK • 01-547 1638

Copyright © 1989, Micrografx, Inc. All rights reserved. Micrografx is a registered trademark and Micrografx Designer and the Micrografx logo are trademarks of Micrografx, Inc. PostScript is a registered trademark of Adobe Systems, Inc.

DSPCW 11.02

Richard Landry

FRED STIMSON

Now It's—Font Wars!

Old wine, new bottles:

Today's industry struggle over imaging models is really a classic PC battle between choice and ease of use.

Macintosh lovers think their systems have PCs beat on several counts, but PCs still hold the edge in sheer complexity. Here's an example: Several months ago, Apple let loose a quiet revolution in Mac graphics with System 7.0, the next-generation operating system that enhances the Mac's QuickDraw imaging model and gives it scalable fonts—typefaces that can be displayed and printed at any size and distorted to produce special effects. Even though this development means an end to Apple's reliance on Adobe's PostScript in favor of a whole new imaging and printing technology based on QuickDraw, Mac users won't be in for any rude shocks. With System 7.0, Apple promises a no-pain/big-gain upgrade.

Meanwhile, at press time PC giants IBM, Microsoft, and Hewlett-Packard were said to be working out an agreement on a similar imaging and font technology for IBM's next-generation environment, OS/2 with Presentation Manager. This agreement reportedly also sidesteps PostScript but doesn't reject it altogether, and makes room for competing technologies like an enhanced Hewlett-Packard PCL printer control language (see *Top of the News* and *Industry Outlook* in this issue). Incredibly, it looks as though the deal even accommodates Apple, with the goal of creating a new market of peripherals that work equally well on Macs and PCs. With so many choices, users are bound to get more graphics power. But they also may find themselves asking an already-too-familiar question: Will this software work with this printer?

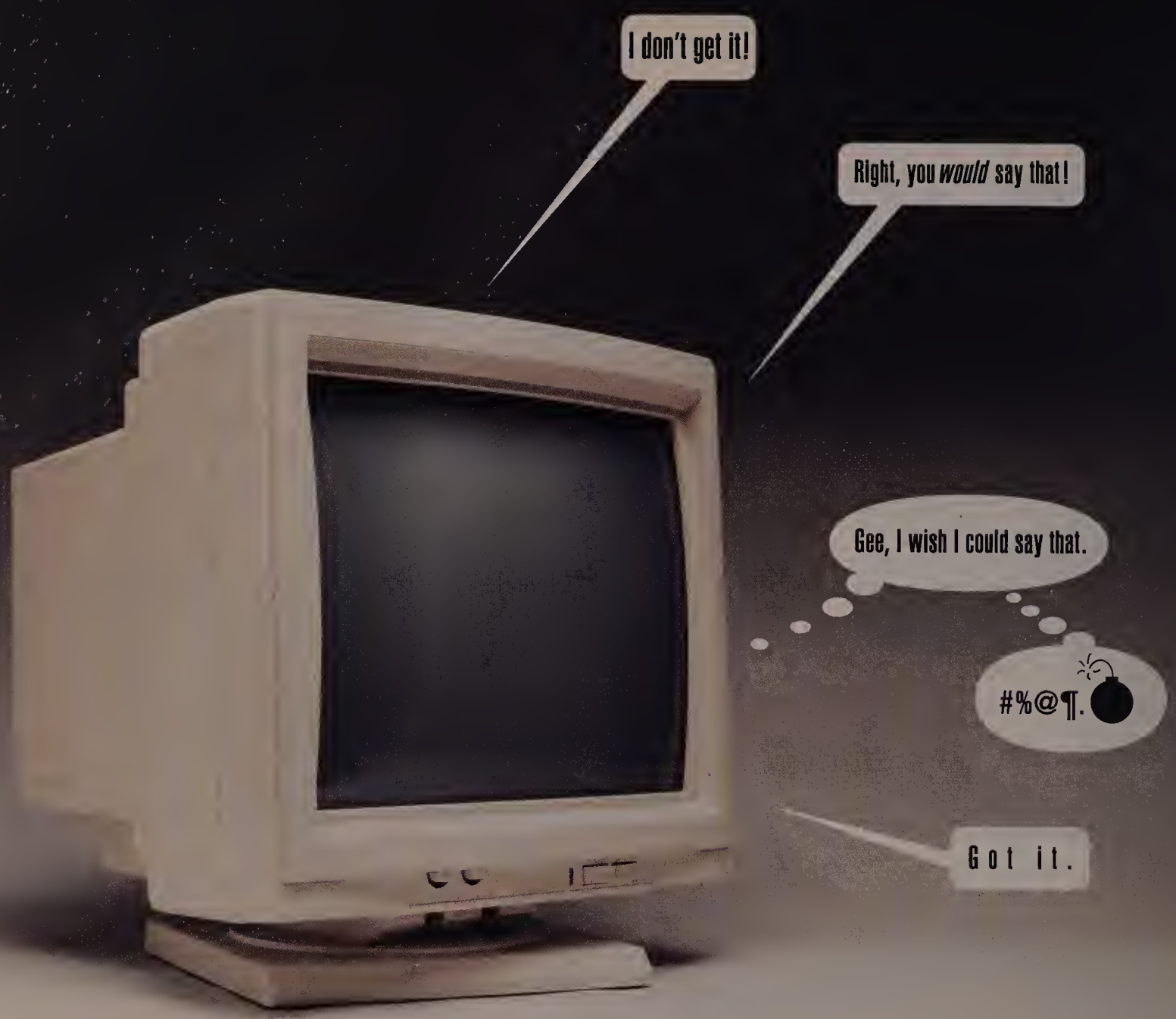
Why Imaging Technology Is Important

Another important question: Do "font wars" over imaging standards really matter? To most *PC World* readers, they definitely will. You've demonstrated a serious appetite for products that extend your powers of communication graphically: word processors with desktop publishing capabilities, laser printers, business graphics programs. All these products can deliver impressive-looking output—depending, of course, on the kinds of fonts and graphics they support. But today, using scalable fonts on a PC can be a time-consuming, complicated, and error-prone process. A good imaging standard should change that.

What's more, good imaging technology is crucial to the next generation of software running under *Windows* and Presentation Manager. Graphical software doesn't simply mean pull-down menus and dialog boxes. The most powerful of these products let you view and analyze information in a graphical way, through custom forms that make it easy to spot important details or trends, for example. With powerful font technology you can highlight the significant information on screen, then reproduce it easily and faithfully on a printer, typesetter, or slide maker.

In the Mac world, Apple has long counted on a combination of QuickDraw and PostScript to keep the peace between display and output. In the *Windows*/PM world, the HP LaserJet reigns as the output standard, but today's PCL language isn't really designed to act as a full-blown imaging standard. The beauty of the reported IBM/Microsoft/HP approach to the problem is that it can accommodate a variety of solutions, each of which has a

(continues)



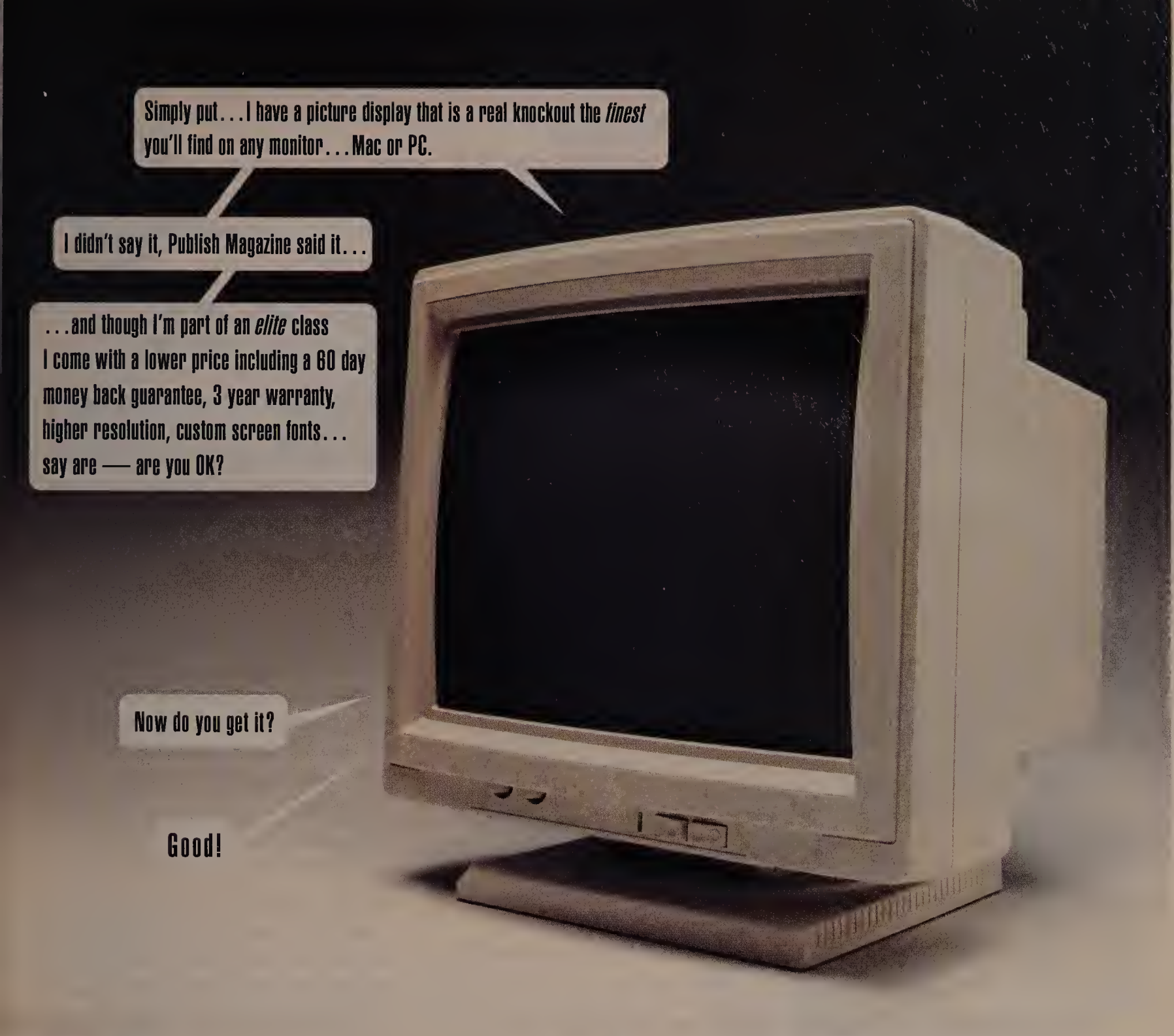
GET IT?

On your left, our competitor...for obvious reasons has asked us to conceal his identity.

On your right, we'd like you to meet our bold new Elite/1600™ monitor, a complete ultra high resolution 20-inch monochrome display system with a 1600 x 1280 pixel resolution.

The same resolution as the Sun-4 workstation monitor. A picture so stable and flicker-free it can only be called extraordinary. For you, this means drawings that are pin-point precise and razor sharp images that are perfectly aligned.

© 1989 Elite Microsystems Inc., Bensalem, PA



GOT IT! GOOD!

It offers the highest quality two-page display system available for the IBM PS/2 Series, and IBM PC and compatible.

Each display system comes complete with a high resolution monitor, video interface card, and software drivers.

The Elite/1600™ is part of our extensive family of display products for the IBM compatible and Macintosh computers.

We carry a complete line of high resolution monochrome, gray-scale, and color display systems. Any other monitor simply pales by comparison.

So call our toll free number today, for our free information package and discover for yourself how beautiful a big monitor can be.

1-800-343-5532

The monitor you've got in mind is probably in our warehouse right now!

Got the picture?

ELITE MICROSYSTEMS

4201 Remo Crescent, Bensalem, PA 19020 USA
Phone: (215) 639-1636 FAX: (215) 639-3420

Circle 80 on reader service card

SHARP ANNOUNCES ANOTHER BREAKTHROUGH IN COLOR SCANNING.

THE JX-100. COLOR AND GRAY-SCALE SCANNING FOR $995.

The Sharp JX-100 personal scanner can be summed up in one word: versatility. This revolutionary scanner features three modes of operation—color, true grayscale and monochrome—at up to 200 dpi. Whether you're producing B&W newsletters, color overheads, slides, or picture databases, the JX-100 fits the bill without breaking the budget.

The JX-100's unique viewfinder system allows perfect alignment of originals. And its hands-free scanning action gives you accurate scanning the first time, every time. It comes complete with a cable and software for either the Macintosh,® IBM® PC/AT or Amiga,® giving you total control over the scanner including preview scanning and cropping.

To find out more, call the people with the outstanding track record in color scanning at 1-800-BE SHARP.

SHARP IS COLOR

SHARP®
FROM SHARP MINDS COME SHARP PRODUCTS™

© 1989 Sharp Electronics Corp. $995 manufacturer's suggested retail price.

Circle 250 on reader service card

shot at delivering the best performance and ease of use at the best price. Users can't kick about that.

Open or Universal?

Still, multiple competing standards usually means confusion and incompatibilities; so if you need a high-performance imaging standard, why not stick with PostScript? It's been around a long time; it has great support from font vendors; and it's well supported by many PC software packages. Further, Adobe argues that PostScript could serve as the perfect universal medium for transferring formatted information between multiple operating systems and environments like DOS, *Windows*, OS/2, the Mac, and UNIX.

Such arguments don't seem to hold much weight with Microsoft, HP, Apple, et al. They'd rather avoid PostScript's licensing fees and instead devise a new standard that allows free document exchange between Macs and PCs. Furthermore, all parties appear eager to encourage a new generation of high-performance, low-cost printers and other peripherals that would take advantage of an open imaging model built directly into the Mac operating system and OS/2.

In the short run, nobody knows how much pain or gain will come from an open imaging model in Presentation Manager. Macintosh owners can rest easy—minimal choices will mean a minimum of disruption. But PC users may not have it so good.

As always, I'm interested in your opinions on this or any other subject. Write to me at *PC World*, 501 Second St., San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685. ●

INCLUDES A MONEY BACK GUARANTEE

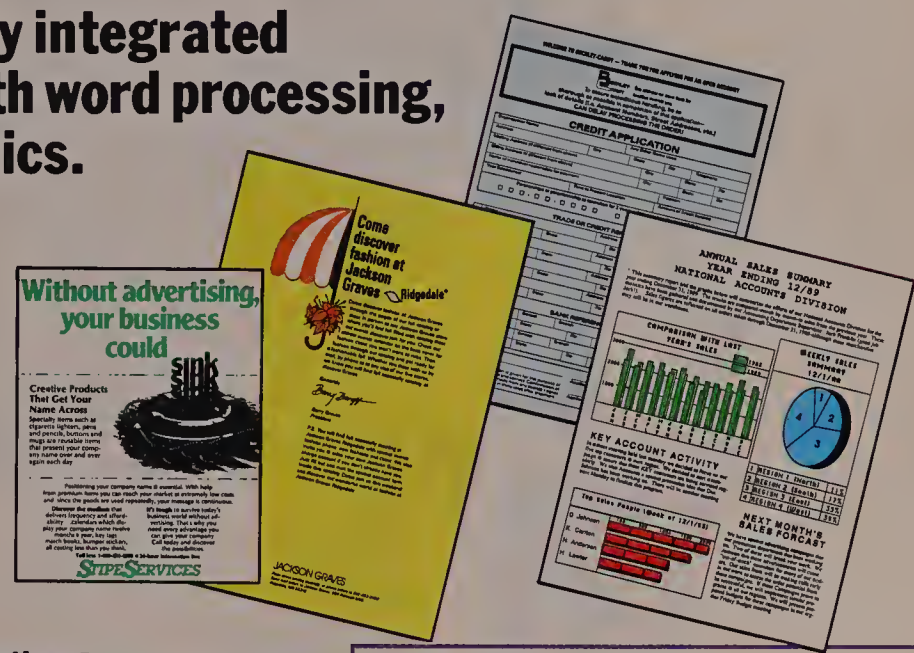
PC WORLD BEST BUY

Publish It! in less than an hour.

PUBLISH IT!—A full-featured, fully integrated desktop publishing powerhouse with word processing, page layout, typesetting and graphics.

Even if you have no design skills or publishing experience, you can get results in less than an hour with *PUBLISH IT!*

For all its state-of-the-art ability, *PUBLISH IT!* is incredibly easy to learn—refreshingly so. *PUBLISH IT!* combines the familiar GEM User Interface, our Quick-Start Mini-Manual, a full complement of Help Screens, and the practical ***WYSIWYG (What-You-See-Is-What-You-Get)*** display—*all* designed to get you up and running in less than one hour!



SPECIAL FEATURES:

- **GEM User Interface:** It's fast and easy. Pull-down menus, icons, scroll bars and dialogue boxes help you learn and use the program quickly. Your display screen shows you exactly what your final product will look like when you print—***What-You-See-Is-What-You-Get.***
- **Flexible Page Layout:** With your mouse or keyboard, you can overlap, reposition, resize, & reshape the text, columns, graphics. Change your layout or experiment almost effortlessly!
- **Built-in Fonts:** Choose from over 1200 possible type-style combinations! Opt for bold, italic, underlined, light, white, & superscript or subscript characters. Type sizes range from 7 to 72 point.**
- **Premium Quality Printouts:** *PUBLISH IT!* uses a special high density printout format that gives you superior quality printouts on your dot matrix printer.
- **Built-in Word Processor:** All the features necessary for everyday word processing, plus most of the sophisticated ones found only in more expensive programs.
- **Text Importing:** Load documents from WORD PERFECT, MICROSOFT WORD, WORDSTAR, WORD WRITER PC, or from any other program with an ASCII text format directly into *PUBLISH IT!**
- **Built-in Graphic Toolbox:** Draw lines, boxes, circles, curved corners, and "free-hand" graphics. Plus, choose from a wide variety of built-in line and fill patterns.
- **Kerning and Leading**
- **Graphics Importing:** Directly import graphics from LOTUS 1-2-3, GEM DRAW, GEM GRAPH, GEM SCAN, PC PAINTBRUSH, and PUBLISHERS PAINTBRUSH.* Then crop and size them to fit.
- **Automatic Text Flow and Word Wrap:** Flows text from around graphics: and from column to column on the same page, or carries it over to subsequent pages.
- **Multiple Size Page Views:** View, edit and layout pages at actual, double or half-size.
- **Over 150 Professionally Drawn Graphics & Illustrations.**
- **Plus, you get worksheets, time-saving features, sample documents & more!**

Here's what the experts say:

"Makes mincemeat out of PFS." **Personal Publishing**

"Full-featured and easy to use . . . you'll crank out your 1st document in less than an hour." **PC Magazine**

". . . The best! A smooth, seamless performer." **PC Resource**

"A Gem of a desktop publisher." **Personal Computing**

"Has everything . . . for producing professional-looking documents . . . with a minimum of fuss." **New York Times**

Includes 5¼" & 3½" disks; supports hard drive.

Suggested Retail Price **$199.95**
(Also available for Macintosh and Apple Computers)

At your local dealer or order direct from Timeworks: **1-312-948-9202.**

FAX: 1-312-948-7626

TIMEWORKS PLATINUM SERIES

444 Lake Cook Rd., Deerfield 60015-4919
312-948-9200

*Registered trademarks of their respective companies.
**Not all printers support 72 point type.
©1987 Timeworks, Inc. All Rights Reserved.

Circle 260 on reader service card

Several steps closer than the competition.

If you're a support-it-yourselfer who likes to buy computers sight unseen through the mail, this ad is not for you.

If, however, you like your computers to come with comprehensive support from a computer professional who's always close by, you're going to love this.

Because this ad is about Everex high performance, highly configurable IBM® compatible STEP™ systems. And, more to the point, it's about the nationwide network of Authorized Everex Computer Systems Resellers who configure, sell, deliver, install, network, support and service them.

They're thoroughly knowledgeable about our complete line of STEP 286-

and 386®-based systems. They'll help you define your computing needs. And they'll work with you to custom configure systems, peripherals and software to match those needs exactly. What's more, because our systems are so configurable, you'll never have to buy more computer than you really need or can afford.

Better yet, their interest in you doesn't end the day they deliver your system. Which means they'll always be close by when you need more support or your systems need service.

For more information about Everex STEP systems and the Authorized Everex Computer Systems Reseller closest to you, call 1-800-334-4552. Because when it comes to support, the competition doesn't even come close.

EVEREX
EVER for EXcellence

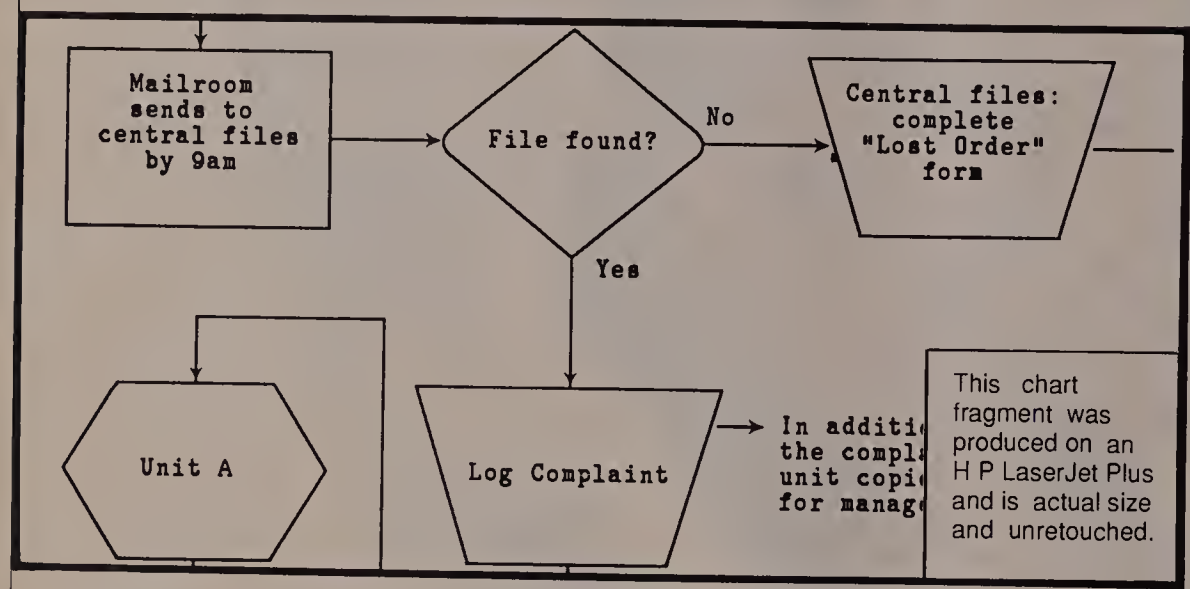
Everex and STEP are trademarks of Everex Systems, Inc. 386 is a trademark of Intel Corp. IBM is a registered trademark of IBM. © 1989 Everex Systems, Inc.

Circle 78 on reader service card

EasyFlow

See us at T 1212
COMDEX/Fall '89
November 13–17, 1989
Tropicana Hotel
Las Vegas, Nevada

An on-screen chart processor that knows about charts and diagrams, not just another "screen-draw" program that makes you do most of the work. **EasyFlow** is a powerful full-screen graphics program dedicated to data-flow diagrams, flow charts and organization charts. With it you can quickly compose diagrams. More important, you can easily modify them so they are always up to date.



This chart fragment was produced on an H P LaserJet Plus and is actual size and unretouched.

Automatic. Fully automatic text centering within shapes. Fully automatic line routing & re-routing. Fully automatic placement of text along lines.

Fast. Written in assembly language for speed.

Large. Diagram size limited only by available memory. Supports LIM expanded memory. Diagram too large for your printer? EasyFlow automatically breaks the diagram up & prints it in page size pieces.

Standard. All standard data flow and flowcharting shapes included. Other shape libraries are available.

User friendly. Don't take our word for it. PC Magazine says *"EASYFLOW lives up to its name. It's hard to imagine any easier and more flexible way to produce basic and even complex flowcharts"*.

Mouse. Optional but fully supported.

It works. Over 50,000 copies sold. Two of the "big eight" accounting firms have world wide site licenses for the use of EasyFlow.

It prints. On most popular printers including IBM, Epson, Toshiba, HP LaserJets, HP Desk Jet XEROX 4045, postscript printers and many others.

It plots. On HP7440, 7475, 7550 and 7585B plotters.

Documented: 130 page manual plus over 150 screens of context sensitive help.

Rush delivery: Order by noon today (eastern time) and you'll have it tomorrow. Rush delivery charge is $10.50 (instead of $2.00) and is available only to continental USA and Canada.

EasyFlow works on IBM PC's, IBM PS/2 and compatibles. Requires 512K memory, hard disk and an IBM CGA/EGA/VGA or Hercules monochrome compatible adapter card.

Order direct for only **$149.95** + $2.00 S&H (USA/Canada), $10.00 (foreign).
Payment by M.O., check, VISA MasterCard or Company PO.

Haven Tree Software Limited
PO Box 1093-M
Thousand Island Park, NY 13692

Order Desk: 1-800-267-0668
Information: (613) 544-6035 ext. 47
Telefax(G3): (613) 544-9632

Circle 79 on reader service card

Next in

PC WORLD

December

1989 Hardware Update

From top to bottom, *PC World*'s year-end review has your hardware needs covered. We'll look at seven high-octane AT clones priced right for the home office. For business users, will systems built around Intel's 386SX chip be the entry-level workstations of the nineties? Our roundup of six top systems will present some powerful evidence.

Even small networks crave big storage. We'll examine ten 300MB-and-up hard drives that promise to transform your ho-hum 386 into a top-notch file server. And we'll put five high-speed modems to the test and find out just how fast, reliable, and compatible they really are.

The Lighter Side

Of course, sometimes the most important computing gets done after quitting time. That's why we've made room in our *almost*-all-hardware issue for a Buyers' Guide to the best games in the PC universe.

Build giant multi-sheet applications in 1-2-3.

See more rows and columns with windows and graphs.

Reveal hidden trends and relationships in 1-2-3.

Turns 1-2-3 or Symphony into a powerful database.

Supercharger for EGA and VGA displays.

Like 3M Post-it Notes™ for your PC.

The cure for 1-2-3 Release 3 envy

Look&Link™

1-2-3™ Release 3 delivers impressive 3D features. But many PC users don't have the hardware to run it. And many others are surprised when they discover its trade-offs.*

Let's face it. Lotus has sold us on the *idea* of multi-sheet applications but offers a solution that many 1-2-3 users can't or won't accept. Personics offers a kinder and gentler solution.

LOOK&LINK™ lets you build true multi-sheet applications in 1-2-3 without moving to Release 3. You get dynamic linking and consolidation plus the ability to see two worksheets on screen at the same time. Noted columnist Jim Seymour says, *"LOOK&LINK could be the answer to Lotus users' prayers... It is a lot more important to a lot more users than Allways."*

With LOOK&LINK, any worksheet can pull values out of other worksheets on disk or in expanded memory. (Supported, *but not required!*) There's no limit to the number of linked sheets, and linked values flow in automatically when you load or recalculate. LOOK&LINK even supports automatic chained linking – sheet 1 draws from sheet 2 which draws from sheet 3, etc.

LOOK&LINK's dual sheet display makes setting up links a snap. Just point and shoot. You can also cut and paste between sheets.

For consolidations and roll-ups, LOOK&LINK makes life especially easy. You can sum a stack of sheets in seconds. So join the party. Now any 1-2-3 user can build applications that span across worksheets.

LOOK&LINK 1.1 is an add-in for 1-2-3 Release 2, 2.01 and 2.2. No special hardware or expanded memory is required. Satisfaction guaranteed.

LOOK&LINK adds multi-sheet features to 1-2-3 Rel 2, 2.01 and 2.2

	1-2-3 Release 3	Release 2.2 2.01 & 2.0	Release 2, 2.01 & 2.2 with LOOK&LINK
Link to a single cell	YES	2.2 only	YES
Link to a range	YES	no	YES
Link to a lookup table	YES	no	YES
Linked values in formulas	YES	no	YES
Automatic chained linking	no	no	YES
See two sheets on screen	YES	no	YES
Cut & paste between sheets	YES	no	YES
Point-and-shoot link setup	YES	no	YES
Automatic consolidation	YES	no	YES
Hierarchical consolidation	no	no	YES

*Release 3 is two to three times slower than Release 2.01 in PC Magazine benchmarks. (9/12/89 issue.) It needs lots of memory, lots of hard disk space, and does not support Release 2 add-ins. Expanded memory cards must be re-configured.

"I have a lot of programs on my hard disk, from a lot of vendors – but no other firm is represented by five titles. And no other utility vendor delivers as much value to my kind of computing as Personics."

Jim Seymour
PC Week
January 30, 1989

To order, send coupon or call toll-free.
Company PO's accepted by mail or fax.

800-445-3311

Please send me: (indicate quantity)

_____ Look&Link @ $99.95 each.

_____ Personics product catalog. FREE.

Choose Disk Format: ☐ 5¼ ☐ 3½

Include $3.75 for shipping. ($12 outside USA and Canada.)
MA residents add 5% sales tax. Catalogs are mailed free.

Payment: ☐ VISA ☐ MC ☐ AMEX ☐ DINERS ☐ CHECK

CARD# EXP. DATE

NAME

ADDRESS PHONE

CITY STATE ZIP

personics
63 Great Road, Maynard, MA 01754
508-897-1575 FAX 508-897-1947

Circle 232 on reader service card

A better 101 across the board.

Functions of the CTRL and CAPS LOCK keys are interchangeable, so you can enter CTRL key combination keystrokes from the home row.

This name is your guarantee of quality.

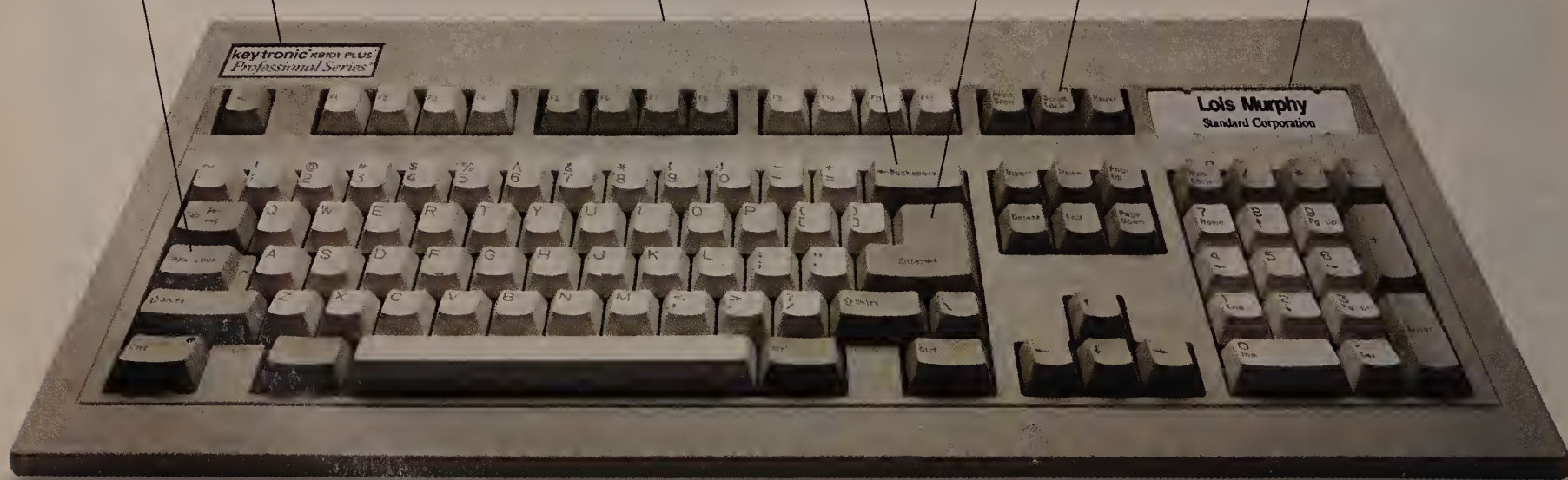
Small footprint saves desktop space.

Our enlarged BACKSPACE key reduces keystroke errors.

Our big L-shaped RETURN key is almost impossible to miss with your little finger.

LED indicators on the NUM, SCROLL and CAPS LOCK keys are easier to see.

Your name goes here on a personalized nameplate.



If it's time to replace your old keyboard, consider yourself lucky.

Now you can buy the new Key Tronic Professional Series® KB 101 PLUS for the IBM PC, XT, AT and PS/2.*

From one end to the other, the KB 101 PLUS is loaded with the latest. No other keyboard, in fact, brings all these new features together for you.

And the quality is unsurpassed. Which makes it possible for Key Tronic to give you a three-year limited warranty.

With your KB 101 PLUS you also get an easy-to-understand user's guide and toll-free product support. From a company with 19 years of keyboard experience and a reputation that isn't foreign to you.

So call your dealer or Key Tronic today.

You won't find a better 101. Across the board. Across the world.

key tronic®
Professional Series®
1-800-262-6006
IN WASHINGTON STATE 1-509-927-5515

* Cable adapter required. IBM PC/XT™ and PS/2™ are trademarks and IBM® and PC AT® are registered trademarks of the IBM Corporation.

Circle 108 on reader service card

LETTERS

Reactions and responses from the PC World community

Steep Upgrade Path

It's no doubt true that most people are willing to pay $51 to $100 to upgrade their software ["Rate Your Satisfaction," *Consumer Watch, PCW,* August 1989]. However, your survey would have generated more useful results if you had asked what percentage of the purchase price users would pay for an updated version.

For example, Microsoft recently charged $50 for an upgrade to *QuickC,* a product that sells for $70. That's more than 70 percent of the new user's price. I find this unacceptable. If I stay with the product long enough, I'll end up buying it three or four times over. I'd like to pay no more than 30 to 40 percent as an upgrade fee.

Mike Blaszczak
East Hartford, Connecticut

BUD PEEN

ANTHONY RUSSO

Who's Serving Whom?

There's no free lunch. Your August 1989 feature "Well-Connected Data Bases" vividly illustrates the point. Data base servers offer many advantages over file servers, but at the cost of concentrating processing power and data at one point in the network. If the data base server is down, the user is stopped cold.

If a fellow were skeptical, he could imagine that PCs networked to a data base server regress to the *status quo ante*—namely, dumb terminals connected to a mainframe, controlled by a central MIS department. And so the pendulum swings—at least it will if we let it.

Henry Schofield Noble
Gaithersburg, Maryland

Window Shopping by Modem

So Stewart Alsop [*Windows Journal, PCW,* July 1989] believes that there hasn't been "any explosion in shareware or public-domain software" for *Windows?* Bunk! If he would log on to any sizable BBS, he would find tons of *Windows* shareware applications, including full-blown communications programs, disk and file utilities, graphics conversion programs, and even a little program called EEMWINFO, which answers Mr. Alsop's request for a way to view and allocate expanded memory. *Windows* shareware is where the action is.

Robert N. Payes
New York, New York

Restoring the Balance

Thank you for mentioning *Balance of Power* [*Windows Journal, PCW,* August 1989]. However, I would like to point out a few errors in Mr. Alsop's column.

When *Balance of Power* was first released for the PC in 1986, there were no boxes to click for selecting countries, but we added a menu interface—absent from the original Mac version. The recently updated *Balance of Power: The 1990 Edition* retains the menus but also allows users to click directly on a country. *Windows'* keyboard interface, multitasking, use of color, and other features have made the PC version superior to its Mac counterpart.

I would encourage other games developers to investigate the *Windows* interface. As *Windows* enters the 1990s with linear memory addressing, fast animation routines, device-independent color bit maps, and improved sound support, I expect

(continues)

At last! A new HP LaserJet just for you.

Document created using Aldus PageMaker® and Microsoft® Windows. Microsoft is a U.S. registered trademark of Microsoft Corp. PageMaker is a U.S. registered trademark of Aldus Corp. © 1989 Hewlett-Packard Company PE12922

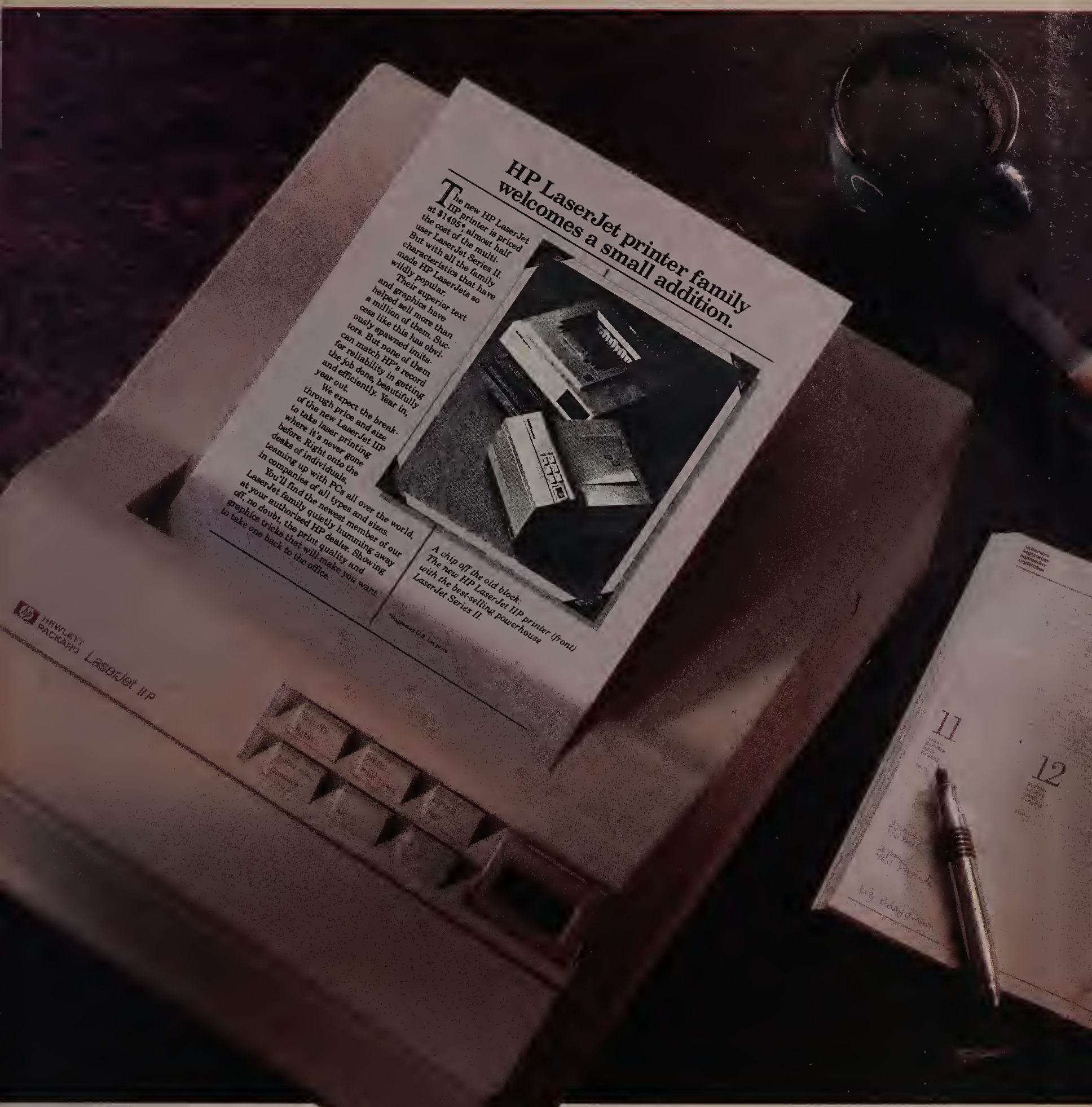
At only $1495*, it's got your name on it.

The HP LaserJet printer family has expanded—in a small way.

The new HP LaserJet IIP (as in Personal) fits right on your desk. And, with a price almost half of the multi-user LaserJet Series II,* into most budgets.

Its simple front panel gives you easy, push-button control over the menu, the 14 internal fonts, form feed and other functions. It handles four different paper sizes: letter, legal, executive and A4, as well as envelopes. In portrait

*Suggested U.S. list prices: LaserJet IIP $1495; LaserJet Series II $2695. Dealer prices vary.



The new HP LaserJet IIP printer.

or landscape configurations. At four pages a minute. From one or two paper bins (the second is optional).

The 512K standard memory is upgradable to 4.5 Mbytes for more complex graphics and publishing programs.

And, of course, our new printer is compatible with the HP LaserJet Series II and virtually all popular PC software.

So call **1-800-752-0900, Ext. 277J** for your nearest authorized HP dealer. Then introduce people at your company to their very own HP LaserJets.

There is a better way.

HEWLETT PACKARD

Circle 87 on reader service card

to see many more games for this powerful environment.

Peter Sills
Product Manager, Mindscape
Northbrook, Illinois

LaserJets Are Here to Stay

The review "PostScript Printers—Right for the Office" [*PCW*, August 1989] ignores some basic tenets of selecting a printer. The first consideration should be the volume of work you expect the printer to produce. Comparing a printer designed for low-volume home office use with one engineered to turn out 25,000 pages per month is like comparing a Chevrolet convertible with a Mack truck; their prices may overlap, but they're made for different work loads.

In addition, the implication on the issue's cover—that PostScript printers are making LaserJets obsolete—is misleading. If LaserJet users need more fonts, a multifont cartridge may prove satisfactory. For a greater number of point sizes, PostScript emulation software can translate PostScript output from any program into PCL format to print on the LaserJet. Also, QMS's JetScript board—sanctioned by Hewlett-Packard and Adobe—can turn the LaserJet II into a PostScript machine for less than $4000 total. With this operational flexibility, cost-effectiveness, and high-quality output, the LaserJet is the most viable printer for business.

Martin P. Neudel
Chicago, Illinois

This Bulletin Board Means Business

We applaud William Rodarmor's summary of the advantages and possible pitfalls of bulletin boards ["The Business BBS: Better Communication Across the Board," *PCW*, August 1989]. BBS platforms are too often maligned or misunderstood. However, the article's title uses our trademarked name. The Business BBS (213/477-2707 voice, 213/477-0408 electronic) offers on-line electronic customer support, runs the worldwide user group for *Xerox Formbase*, and handles private bulletin boards for an annual company fee and hourly rate.

Jim Appleby
SYSOP, The Business BBS
Los Angeles, California

(continues)

Here's the PC Voice Mail system that can increase your productivity by over 9 weeks.

The average business person ***wastes*** 5 to 7* hours each week on the telephone. That's over 9 weeks a year of wasted time and profits. That's why you need Watson.

What Is Watson?
It's the $249 hardware and software system that turns your PC and telephone into an intelligent communications system that outperforms voice messaging systems costing thousands of dollars more.

Why Watson?
Because Watson invented the category of PC voice mail. Because *PC Magazine* selected Watson Version 1 as "Editor's Choice for Product of the Year in 1984." Because Watson Version 6.23 is a Hayes compatible modem (1200 or 2400 BPS) that runs completely in the background without interfering with other computing functions. Because Watson comes with a 60-day free support program. Because Watson has over 30,000 satisfied users. *And because over 45% of our sales come from user referrals!*

All This For Just $249.
With basic Watson you'll get a single or multiple user system that answers the phone; forwards messages to *any* phone, even pagers; provides private and public voice mailboxes; gives you a personal calendar and programmable alarms plus a dictation system with full featured voice editing. You'll get auto dialing, remote access operation and message retrieval. Plus a sortable phone book based on a Rolodex™ file card structure in which you can enter free form notes and do key word searches. And it's all yours for just $249.

Watson—Voice Information System (VIS)™ Option.
An English-like command language that allows you to customize voice messages, control message sequences with touch tones for both inbound and outbound response applications.

Hear All About It.
To decide which Watson is right for you, *call our Demo Hotline. You'll hear an actual demonstration* and discover all the ways Watson can work for you.

Call Our Demo Hotline Now.
1-800-6-WATSON, EXT. 252. In MA 1-508-651-2186 EXT. 252. Or to order Watson directly, call 1-800-533-6120 EXT. 252 (in MA 1-508-655-6066 EXT. 252).

MasterCard, VISA, and American Express accepted.

30 Day Money-Back Guarantee.
Try Watson for 30 days. If you aren't completely satisfied, return it for a full refund.

FREE Copy Of *Phone Power* Just For Listening To Our Demo.
We'll send you a free copy of *Phone Power*, if you call before 11/30/89 and ask for extension 252. No order necessary. Over 200 pages of practical techniques for small business owners and company executives. Make your telephone and your time more profitable.

*George Walther, *Phone Power* (New York: Berkley Books, 1986).

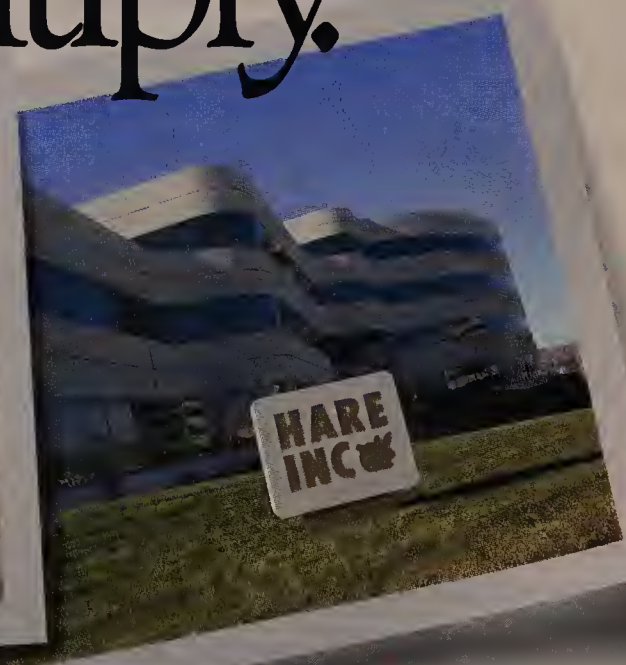
Call on the power of **Watson**®
from **Natural MicroSystems** NMS
8 Erie Drive, Natick, MA 01760-1313

Circle 63 on reader service card

Accounting Software So Sophisticated It Even Lets You Multiply.

Small business will get off to a jackrabbit start with ACCPAC® Bedford.®

As your business grows by leaps and bounds, move up to ACCPAC BPI.®



Even the most sophisticated breed of business is handled by ACCPAC® Plus.

The simple truth is, the business of business is to grow. The sad truth is, most accounting software can't handle that. Built-in obsolescence seems to be a standard feature.

Which is the most compelling reason to consider the ACCPAC® line. Because it is precisely that: a line. A smooth, efficient path for expansion. Allowing you to transfer data when you trade up.

The starting point is ACCPAC Bedford. Its quick set up and ease of use prompted *InfoWorld* to praise it as a "cut above" the competition.

As you grow, take your data with you and trade up to a 6-module workhorse: ACCPAC BPI Accounting. Fast and comprehensive, *PC World* calls it an "outstanding value."

Finally, our powerhouse ACCPAC Plus offers predesigned, off-the-shelf solutions for a wide variety of businesses. Rated "best in its class" by *InfoWorld*, Plus offers the ultimate in power and control.

One more thing.

Every ACCPAC product comes with a terrific feature the competition can't match: the support and stability of the world's leading independent software company.

To find out more, call 1-800-531-5236. In Canada, call 1-800-663-6904. We'll tell you more about ACCPAC and what it can do for your business. Namely, help it grow.

COMPUTER ASSOCIATES®
Software superior by design.

© 1989 Computer Associates International, Inc., 1240 McKay Dr., San Jose, CA 95131

Circle 45 on reader service card

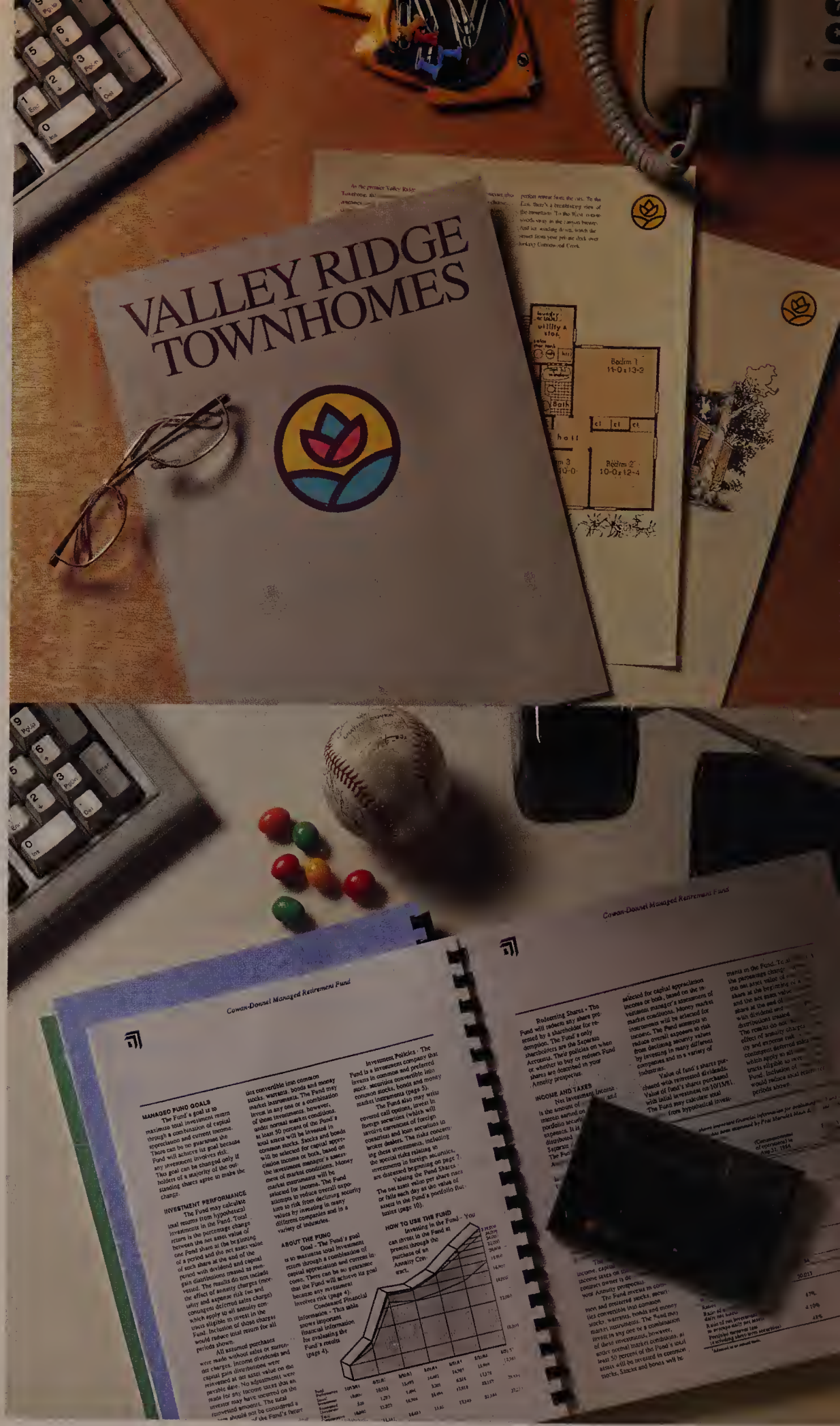
Today, desktop publishing means more to business than ever before. And Aldus PageMaker® means desktop publishing to more businesses worldwide than any other software program.

Unlike less versatile programs, PageMaker lets you quickly create everything from simple business forms to award-winning brochures. And it makes short work of long documents, too.

Your computer becomes a powerful business communications tool. Which gives you greater control of deadlines and costs while making your document processing more productive.

If you can use a computer, you can create great-looking documents with PageMaker. Professionally designed templates give you a streamlined way to generate hard-hitting reports, manuals, or newsletters. So you don't need a degree in graphic design to make a graphic impression.

Only a program like Aldus PageMaker makes it so easy to incorporate spreadsheets, logos, charts, tables, and other graphics into your documents. Materials that once took days can be produced in hours.



AND YOU THOUGHT D
WAS NONE OF Y

Offer good in U.S. and Canada only and expires January 31, 1990. Aldus, the Aldus logo, and PageMaker are registered trademarks of Aldus Corporation. Macintosh is a registered trademark of Apple Computer Inc. ©1989 Aldus Corporation. All rights reserved.

PageMaker works well in your existing business environment, too. It does a beautiful job of integrating with your favorite word-processing and spreadsheet programs. Its files even transfer directly between Macintosh and PC versions. Plus, it works with more business software and printers than any other desktop publishing product available today.

So if you thought desktop publishing was none of your business, think again. And consider how PageMaker can give your business a competitive edge.

See why PageMaker means business.

To see how easily PageMaker can improve your business communications, and your bottom line, visit your authorized Aldus dealer. Or, call 1-800-333-2538, Department 33B for a FREE Aldus PageMaker information packet.*

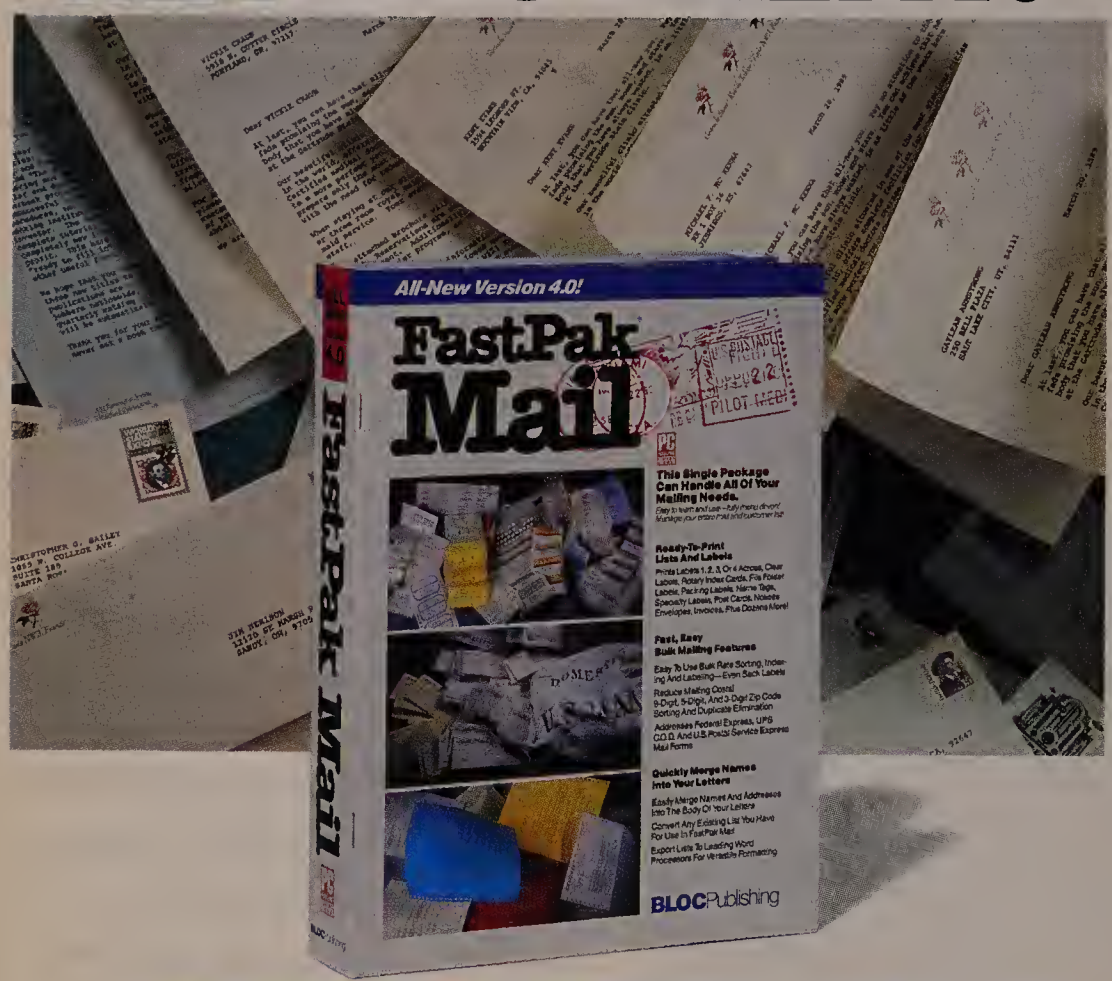
ALDUS®

The Creative Edge in Business.

ESKTOP PUBLISHING OUR BUSINESS.

Circle 8 on reader service card

HIGH PERFORMANCE MAIL LIST MANAGEMENT.



FastPak Mail PROFESSIONAL. Just $79.95

The Powerful Business Mail List Management Software That Outperforms Packages Costing Ten Times More—Right Out Of The Box!

FastPak Mail packs amazing power, an array of professional features, and smooth flexibility into an easy to use software system that slashes the time and effort spent on mailing chores.

It makes light work of organizing and preparing mailing to current customers, sales leads, personal contacts, friends, family and associates.

NOTHING EVEN COMES CLOSE TO FASTPAK MAIL...

In fact, FastPak Mail contains features that you simply can't find anywhere else—like automatic duplicate elimination within your lists, a built-in word processor, a mini-database, streamlined menus and "lowest-cost" bulk mail sorting and preparation. And FastPak Mail can handle up to 64,000 names.

READY TO USE FORMATS FOR LISTS, LABELS AND LETTERS.

Quickly select and print *any available* label format, including 1, 2, 3, or 4-across, clear labels, packing and specialty labels, envelopes, rotary index cards, post cards, invoices, notices and more.

USE YOUR EXISTING INFORMATION...

You can use existing information straight from your database or word processor to create new lists, or to customize letters, envelopes, newsletters, labels and direct mail advertising. No set-up. No mess. Just select the task from the sleek pull-down menu system.

See your dealer or call (800) 888-2562

For the IBM PC, XT, AT, PS/2 and compatibles with 256K RAM. Supports virtually any dot matrix printer—and the HP LaserJet Plus and Series II laser printers.

PC MAGAZINE EDITOR'S CHOICE

PC Magazine's "Editor's Choice"

BLOCPublishing

800 Southwest 37th Avenue, Suite 765, Coral Gables Florida 33134.

Copyright 1989, BLOC Publishing. FastPak Mail is a trademark of BLOC Publishing Corp.

Tell Us About the Interface

I am tired of word processing reviews that emphasize briefly seductive features over the basic user interface, which has the greater long-term effect on productivity. Your review "Advanced Word Processors—Familiar Faces, New Features" [*PCW*, July 1989] focused on "critical advanced features" and extolled mouse support because it "lets you edit at warp speed." First, the words *critical* and *advanced* don't always wed in practice: Of your list of features, only mail merge might qualify as both. Second, the mouse only helps you *learn* on-screen editing at warp speed: Not only is time lost transferring hand to mouse, but humans cannot point both quickly and accurately.

You can get used to the peculiarities of any word processor, but some interfaces are simply better than others. It's hard to believe you would rate *WordPerfect* tops while admitting it has so many options crowding the function keys that "it's hard even for experts to remember the commands."

Jim Carls
Memphis, Tennessee

The Brightest Star

Your word processing review [*PCW*, July 1989] contains several errors about *WordStar 2000 Plus 3.0*. The program *can* use simple key combinations—defined on the fly—as well as function keys to activate macros. The review states that *WordStar* cannot format portions of text; in fact *WS2000*'s style sheets are as capable as *WordPerfect*'s and

(continues)

THE LASERNET PRINTER SHARING FAMILY.

WHETHER YOU NEED A LOT OF FUNCTIONALITY...

OR JUST A LITTLE.

Computer printer sharing requirements are not created equal. That's why Western Telematic™ developed the Lasernet® Printer Sharing Family. Whether you need to share plotters or printers, dot-matrix or laser, we have a device that gives you all the capability you need without buying more than you need.

AS EASY AS A, B, C.

Lasernet easily allows as many as eight PCs to share up to two printers or plotters with full functionality for the most demanding workloads—or the simplest.

If you require fast printer access for heavy-demand workloads, there's the Lasernet "C" Series with concurrent inputs and outputs for "no wait" printing. The "C" Series is compatible with AutoCad® and PostScript® and is ideal for CAD/CAM/CAE plotting or desk-top publishing applications.

For less demanding situations, you need the Lasernet "B" Series with buffered memory and PostScript compatibility. It's the most cost-effective printer sharing solution for the medium size office or school environment.

And if simple printer sharing is all you require, we have the Lasernet "A" Series for low-demand workloads. Like our "B" and "C" series, "A" units can accommodate popular software packages like Lotus 1-2-3® and WordPerfect®.

SETTING THE STANDARD.

The Lasernet Family has standard features that have set the standard for printer sharing. Up to 2 MB of memory. Easy menu-driven configuration and set-up. Serial/parallel inputs and outputs. Compatibility with all popular printers and plotters. And WTI is well suited to set standards—we're the 25 year old company that invented automatic printer sharing.

QUALITY AND SERVICE.

Lasernet is quality designed and American made, backed by a full **three-year** limited warranty. And we support you with qualified WTI technical representatives through our 800 number.

So when you're looking for a printer sharing device, take a look at the family that helps you sort out the confusion. Lasernet from Western Telematic.

LASERNET®

For more information call us toll free at ***1-800-854-7226.*** In California call 1-714-586-9950 or write Western Telematic Inc., 5 Sterling, Irvine, CA 92718.

Visit us at Comdex Booth No. 1612

wti western™ telematic inc.

Making good connections.℠

© Copyright-1989 Western Telematic Inc. All rights reserved. AutoCad, PostScript, Lotus 1-2-3 and WordPerfect are registered trademarks of their respective companies. The Swiss Army Officers' knife and logo are trademarks of VICTORINOX of Switzerland, Ltd.

Circle 325 on reader service card

Power Meeting.

Power up your presentations with a Proxima Data Display. It brings your computer on line to make meetings come alive.

You probably spend much of each day in meetings. How smart you look, and how effectively you make your point, can make or break a career. You need a Proxima™ Data Display, from Computer Accessories Corporation.

Proxima Data Displays plug into your computer's monitor port, alongside the monitor you're now using. Just set the Data Display

op any conventional overhead pro-
ctor to project precisely the image
ur computer generates.

POWER PRESENTATIONS

ie Proxima family of Data Displays
rn ordinary overhead projectors
to power tools. They provide a real-
ne interface between your com-
iter and the meeting room wall.
hy, you can even change your
data as you present it, and respond
to "What if..." questions on the
spot. *That's* power.

Proxima Data Displays are perfect
for sales presentations, training ses-
sions, financial analysis — whenever
you need to share your data.

Control your software and man-
age your presentation with a touch
of the keyboard or, with the Data
Display MultiMode,™ a click of the
hands-free remote control.

Use the latest software to create
attention-getting animated segments
and slide-show like
special effects. Reveal
pie charts and other
graphical presentations
of data that drive your
message home. Look
smart. Feel smart.
With Proxima, you're
in control.

Small, light and portable, Proxima Data Displays travel with you.

PROXIMA SETS THE STANDARD

Our new Data Display MultiMode
sets the standard for projection
panels with the highest resolution
display available — 720 x 480 pixels
— essential for displaying VGA
text. It's compatible with a broad
range of video standards — CGA,
EGA and VGA — and systems — PS/2,
AT, XT and compatibles, and
Macintosh and Macintosh II. And
only Proxima gives you OptiView,™
so even complex color images
from your computer screen are
optimized for overhead projection.

For the full story on how
Proxima Data Displays can give you
presentation power, and the name
of the dealer nearest you, call
us — 800/582-2580, ext. 35 (in
California, 800/582-0852).

PROXIMA

by Computer Accessories Corp.

Macintosh is a trademark of Apple Computer. Proxima, MultiMode and OptiView are trademarks and Data Display is a registered trademark of Computer Accessories Corporation. Patent Pending. ©1989, Computer Accessories Corporation

Circle 39 on reader service card

better than most. Finally, the Features Evaluation indicates that the program does not support math. *WS2000* can calculate figures in columns and in paragraphs containing text and numbers, including exponentials and compound equations.

Mitch Chinn
Zweibrücken, West Germany

Corrections and Clarifications

Power Tip No. 59 on page 32 of *PCW* August 1989 contains an error. To mark files in a *WordPerfect* directory listing, press <Shift>-8, which marks them with an asterisk.

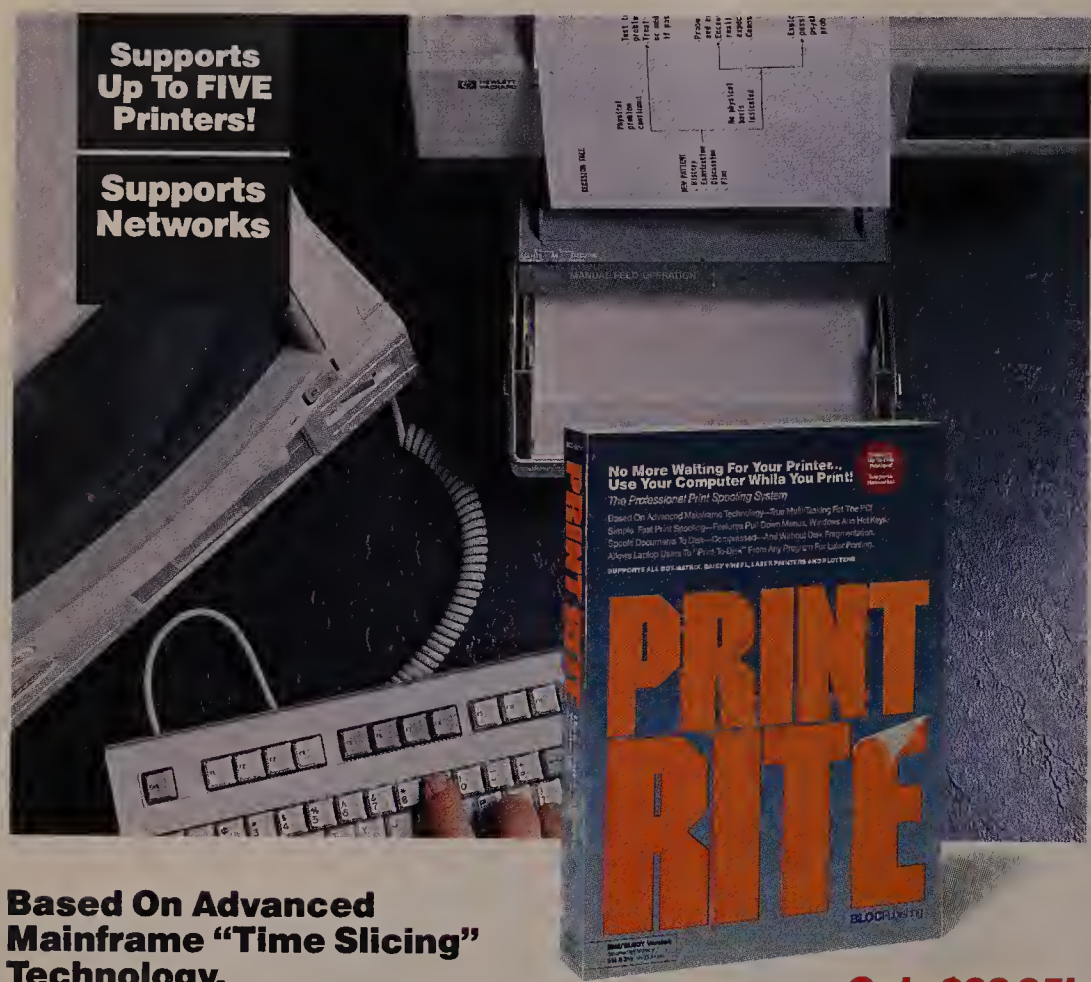
The August 1989 *Product Outlook* item on Electronic Speech Systems' Fax/Phone Switch II stated that the product could switch between fax, voice, and modem on one phone line. While the product can handle all three types of communication, it is limited to two device ports. *PC World* regrets the errors.

Some important changes to the program we called *Quattro Professional 2.0* occurred after our October preview went to press: Borland has renamed the spreadsheet *Quattro Pro*, dropped the price of the original *Quattro* to $129.95, and changed its upgrade policy: If you bought *Quattro* after September 6, 1989, you can upgrade to *Quattro Pro* for $199.95.

To send correspondence, please see How to Contact PC World, page 4. ●

THE PROFESSIONAL STRENGTH PRINT SPOOLER.

Print While You Work (At Top Speed) On Your PC!



Based On Advanced Mainframe "Time Slicing" Technology.

Stop wasting time waiting for your printer to finish a document so you can continue to work on your PC. Harness the power of professional mainframe spooling technology—in a fast, easy to learn and use package.

Introducing PrintRite. Designed for fast, efficient operation, its streamlined pull-down menus allow you to print documents, lists, labels, spreadsheets—anything—*while you continue to work, uninterrupted, on your PC.*

PrintRite compresses spooled files to disk for ultra-efficient use of memory.

In addition, PrintRite spools each file separately (rather than in one large file) to eliminate costly hard-disk fragmentation.

And only PrintRite allows you to control *five printers* at one time, so you can dedicate specific printers for certain tasks.

Menu-Driven, Streamlined For Fast "On The Fly" Use.

Pop PrintRite up anytime and view the queue and documents on-line. Change the printing order, specify the number of copies, specify sideways printing, add items—even pause and restart.

And PrintRite will automatically align your documents in your printer!

Only $99.95!

No Other Spooling System Even Comes Close...

- *Powerful print queue management made amazingly easy. Assign different printers for different printing tasks.*
- ***Laptop users** who create or edit documents away from the office can store them—ready-to-print—until they get back to their printer.*
- *Supports up to 5 different printers—with or without a network!*
- *No other package compresses files for efficient storage.*
- *Groups and prints jobs of similar printing requirements together—forms, text, graphics, sideways, etc.*
- *Prints up to 65,535 copies and spools up to 255 reports!*
- *'Hot keys' simplify use of multiple memory resident programs.*

System Requirements *IBM PC, XT, AT, PS/2 compatibles Requires 50K. Supports any printer.*

See your dealer or call (800) 888-2562

BLOCPublishing

BLOC Publishing, 800 SW 37th Ave., Suite 765, Coral Gables, Florida 33134

© Copyright 1989, BLOC Publishing Corp. PrintRite is a trademark of BLOC Publishing.

We have

The

information,

and getting it

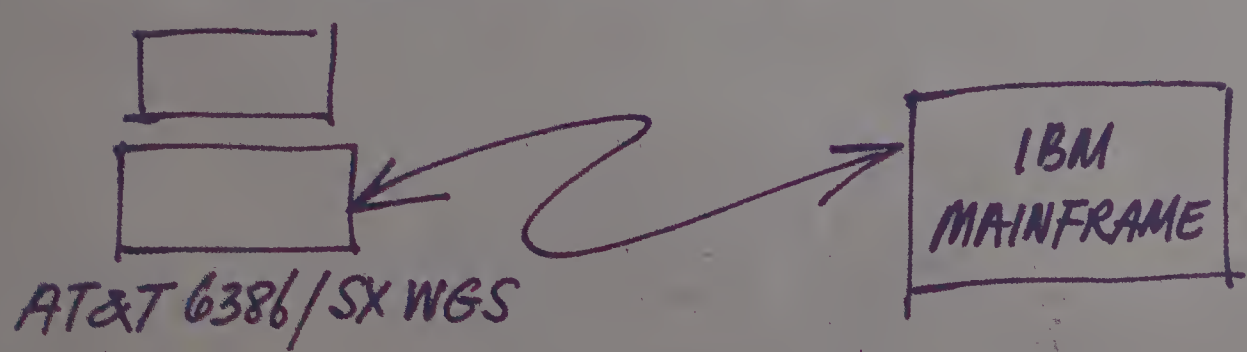
back will

cost you.

AA AIRLEASE INC.
1570 AIRPORT ROAD
SKYVILLE, PA. 15032
TEL (412) 555-4000

J.M. MORRISON
VICE PRESIDENT
MARKETING

AN END TO VENDOR BOUNDARIES



Introducing Four New Networked Computers

Your information systems are supposed to help people make the most of the information they have. But how often do ordinary computers hold up that very information?

We offer a solution: Four new desktop systems and servers designed by AT&T to *thrive* as networked systems.

These are *inter*personal computers. AT&T's new systems (ranging from a simple PC-to-mainframe package to a "connoisseur's" server for mission-critical applications) bring together more than information. They bring together the people behind it.

Meet your other systems. Sharing information among people using different manufacturers' equipment has always been a problem.

Now the solution's as simple as the example in the first drawing above. A new AT&T 6386/SX WorkGroup System links to an existing IBM® host and gives your people access to important corporate data held there.

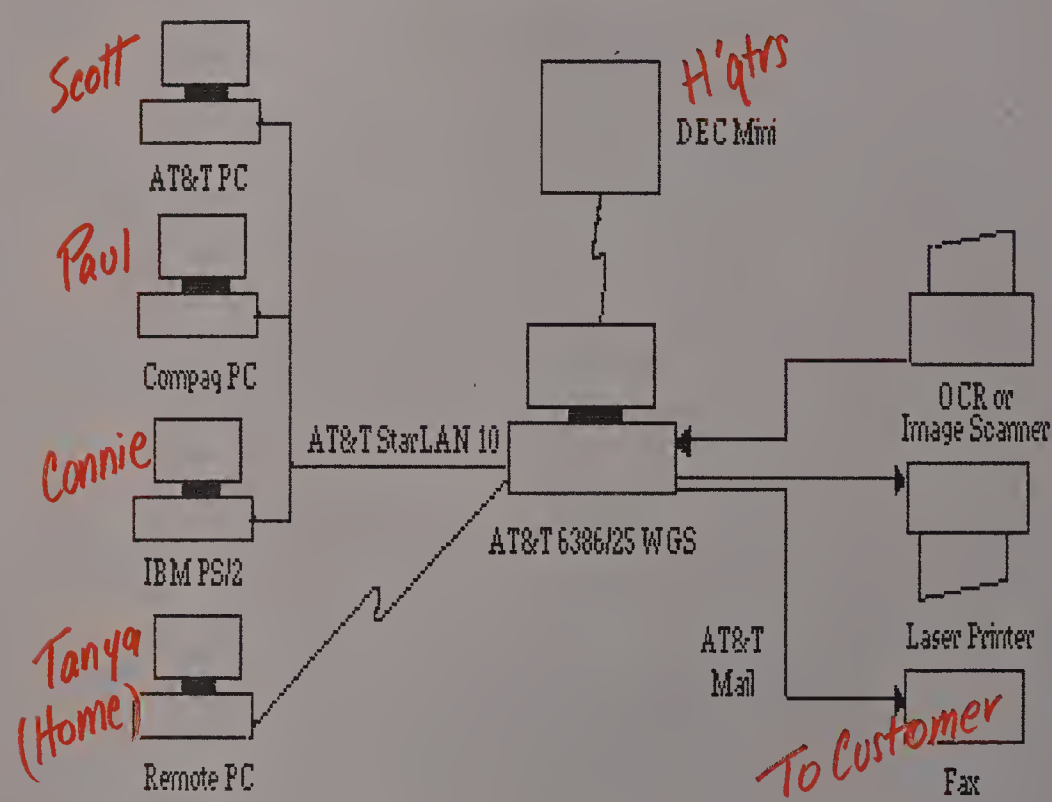
The key lies in a network builder's oasis called the AT&T Application Operating Environment (AOE). AOE offers a unique collection of industry stan-

OS/2 is a trademark and PS/2 and IBM are registered trademarks of International Business Machines Corporation.

Compaq is a registered trademark of Compaq Computer Corporation.
DEC is a registered trademark of Digital Equipment Corporation.

The Networked Co

New applications for old PCs.



dards (SNA in this case) that let AT&T's new Networked Computers work smoothly with the systems you already have.

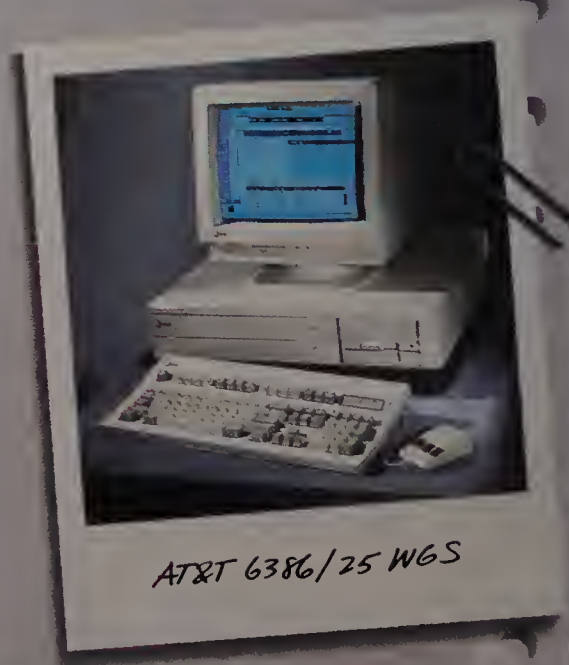
How to share new applications and precious resources.

Take the case of Scott, Paul, Connie and Tanya in the second diagram. They each rely on expensive peripherals, but you can't afford to get them individual sets. And their complex, networked application would really strain your existing DOS server.

Enter the AT&T 6386/25 WGS, our entry-level UNIX® System V server. UNIX System V is the only desktop operating system *designed* for communication-intensive applications. And since it also supports AT&T's OPEN LOOK™ Graphical User Interface, life can be visibly easier.

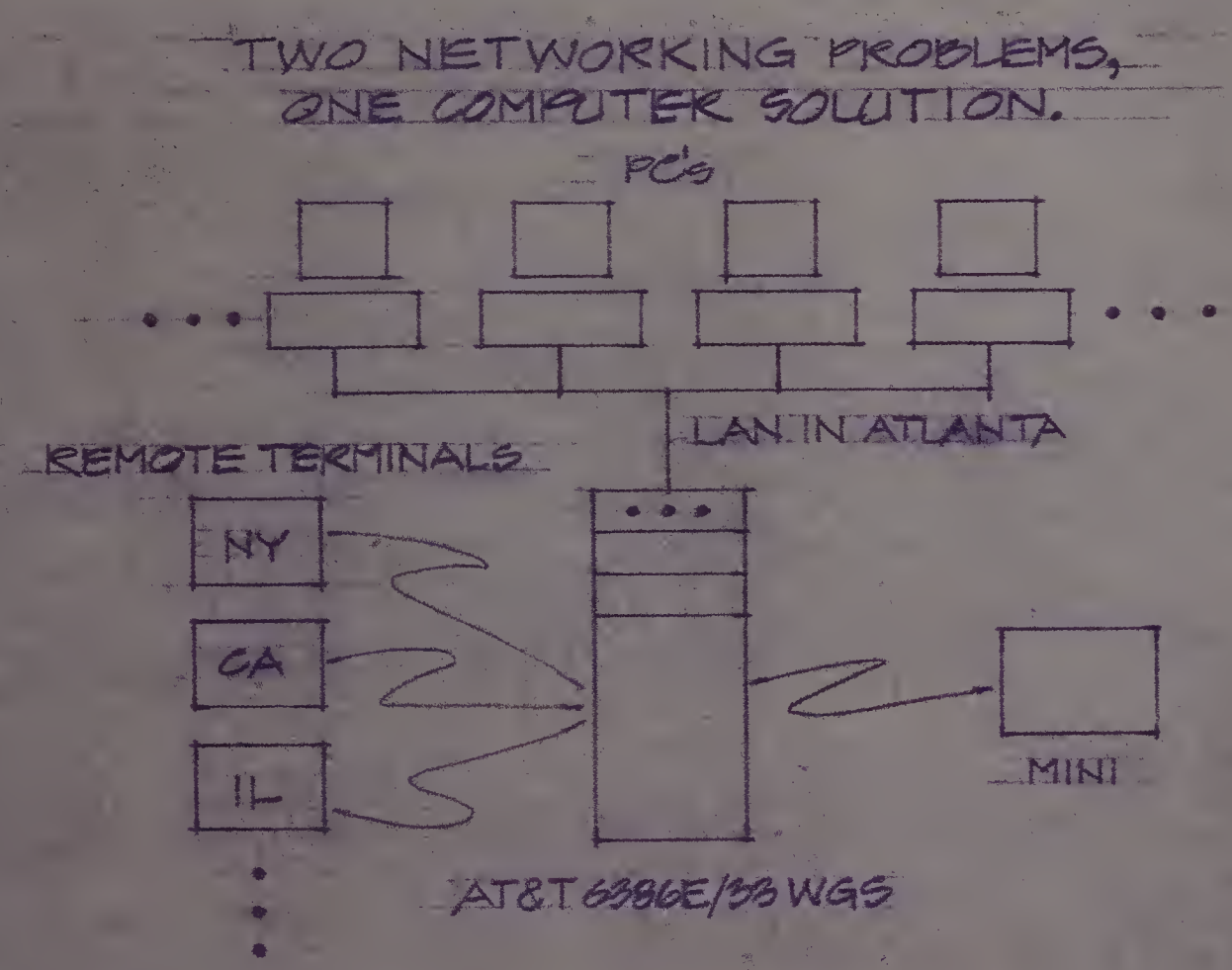
We've given the 6386/25 features that exploit the UNIX system's natural ability. So it's perfect for resource-sharing, database management and other applications DOS and OS/2™ just can't handle efficiently.

In fact, AT&T has configured, packaged and tested solutions including communications, database and image servers. Just let us show you.

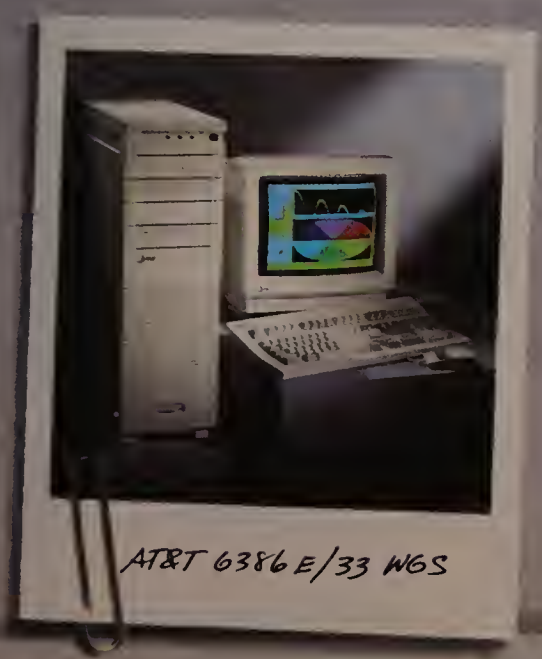


Amdahl is a registered trademark of Amdahl Corporation.
UNIX is a registered trademark of AT&T in the U.S. and other countries.
OPEN LOOK and StarGROUP are trademarks of AT&T.
Ethernet is a trademark of Xerox Corporation.

mputers. From AT&T.



Simultaneous solutions. Chances are you need a server to support information sharing in a local PC network. Fair enough. But here's a Networked Computer that will also manage a nationwide database at the same time.



With headquarters in Atlanta, you have people in two dozen offices scattered across the U.S. Because geography makes interoffice agreement difficult, you feel more like twenty-five little companies than one big one.

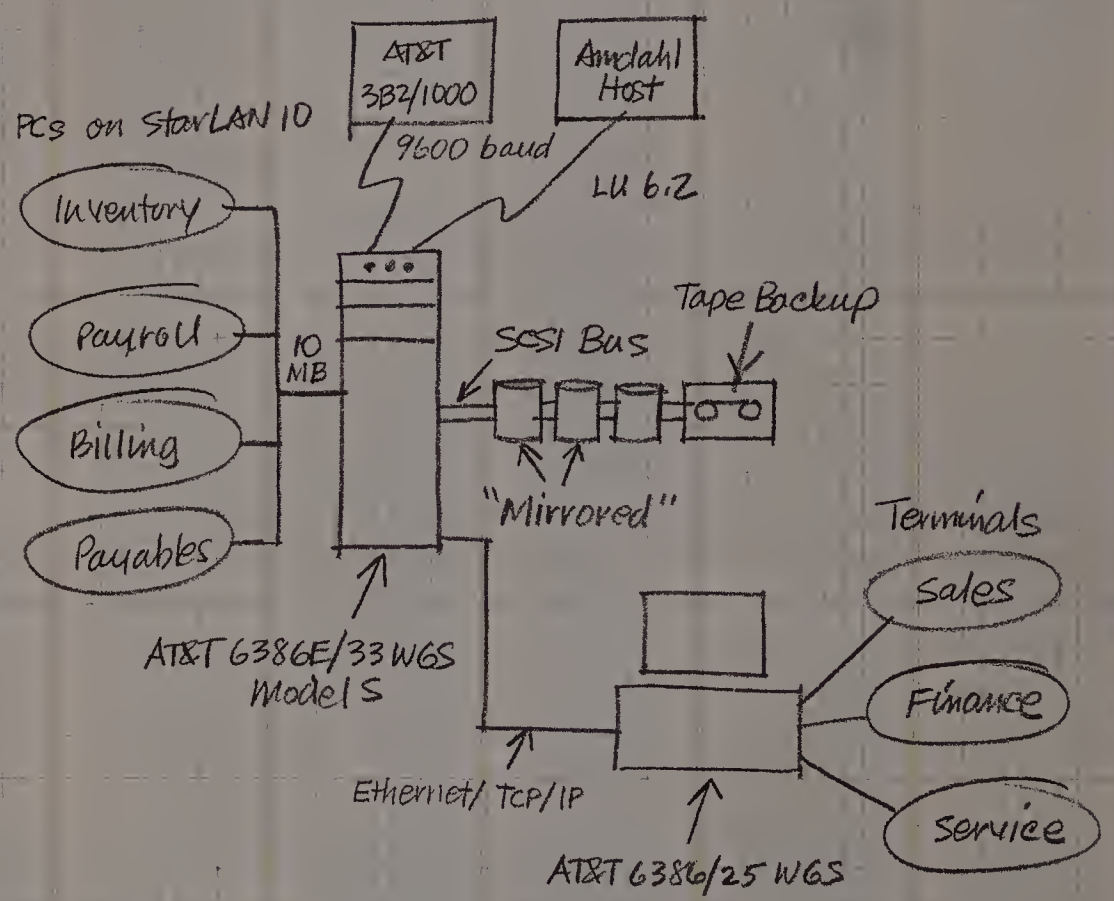
In Atlanta, put 600 MB of data into the disk space of an AT&T 6386E/33 WGS. Place asynch terminals in your field offices, and connect them directly to the 6386E/33 WGS. Suddenly, everyone's working with the same numbers, the same names, everything. Which, at about 7.7 MIPS, is power that would make some mainframes blush.

Now, shift into high gear by connecting the PC LAN you already have in Atlanta. We provide the systems and expertise you need to support LAN *and* remote terminal applications at the same time.

And for mission-critical Networked Computing, our solution is the AT&T 6386E/33 WGS Model S. It shines in networks like the one shown in the final diagram—where every bit

*One-year, on-site warranty

No mission-critical maybes.

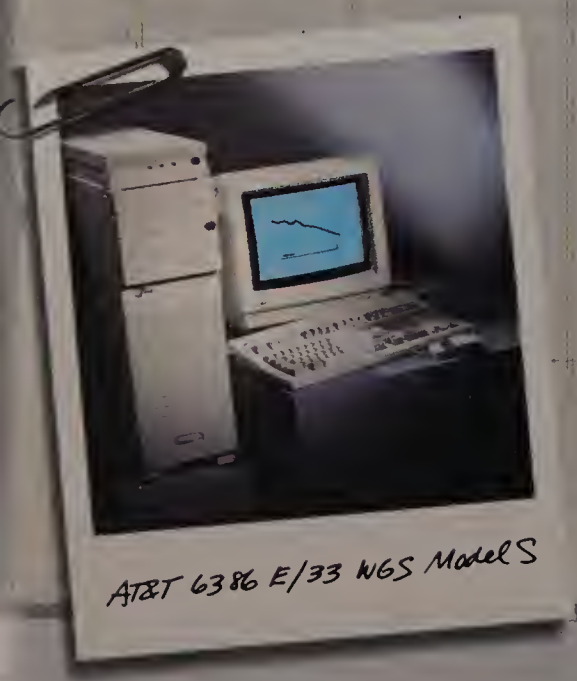


of information from people in one department can trigger action by people in another.

To protect all that information, we include a special "disk mirroring" feature that performs automatic, instantaneous backups. And since the Model S comes with SCSI, you get seven times more storage than non-SCSI 386 products.

On top of that, we test and warrant* each element of the package, then assemble the complete system, including SCSI devices, UNIX System V operating system, StarLAN 10 networking hardware, and StarGROUP™ software.

Let's talk. You'll find the Networked Computing experts make good listeners. We can customize, install and integrate the Networked Computers in as many different ways as you have needs. To learn more, simply call your AT&T Authorized Reseller or AT&T Account Executive. Or just turn the page.



AT&T
Computer Systems

Don't let ordinary computers hold up your information anymore.

Show us your networked computing problem.

Draw or explain it below, and then Fax it to us at **1 800 833-6386**, and a sales representative will call you. Or call your AT&T Authorized Reseller, AT&T Account Executive, or **1 800 247-1212, Ext. 162**, for more information.

Please give us the following information so we can best help you.

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone ( ) _____

Type of business
and number of locations _____

Purchase interest time frame _____

Publication ad appeared in _____

AT&T
Computer Systems

© 1989 AT&T

THE HELP SCREEN

PC World offers answers and advice at every level

Catch on to caching, fix a file name that contains a space, prolong the life of your PC's hard disk, get a second opinion on a disagreeable diagnosis, and speed up First Publisher printing.

Karl Koessel

Catch as Cache Can

Q. *No one in my computer science class can clearly explain to me what a cache is. I know it's supposed to speed up my computer, but just how does it work?*

Wilfredo Reyes P.
Miami, Florida

A. Two kinds of caching are available for today's PCs: *memory* caching and *disk* caching. Although both serve as repositories for data, they serve different purposes and are often confused. Furthermore, caching is implemented differently depending on the manufacturer, so consider the following only a general description.

Memory caching does not in and of itself speed up a system. It is often mistakenly thought to do so because it's useful only in today's very fast PCs, in which the speed of the CPU outstrips the speed of typical memory chips.

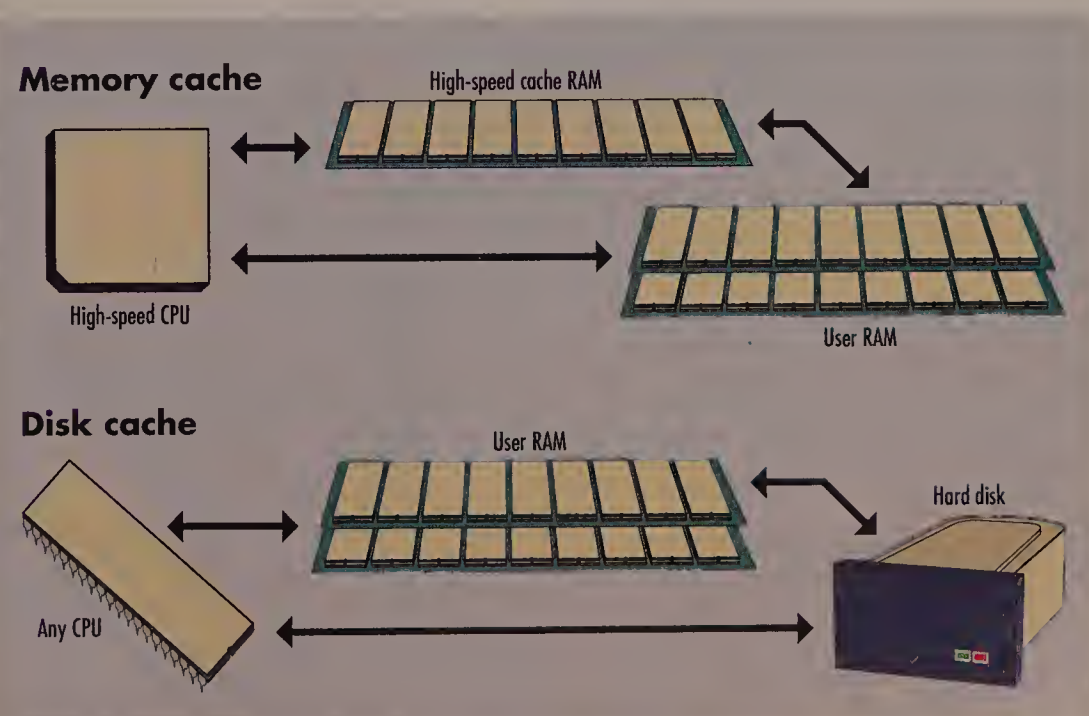
Memory caching enables manufacturers to produce affordable high-speed systems. Such systems could use fast RAM for system memory, obviating the need for a memory cache, but the more expensive memory chips would push the system price too high to be competitive.

Memory caching cannot be added to a system; it must be designed in from the beginning. A memory cache consists of a cache controller and a small amount—typically 32K to 128K—of high-speed memory. It sits between the CPU and addressable system RAM.

When the CPU requests data from system memory, the cache controller intervenes, looking into its cache RAM to see if the requested block of data is there. If so, the data is passed quickly to the CPU byte by byte. If not, the CPU spins its wheels while it waits for slower system RAM to provide the data. This block of data passes through the cache, which keeps a copy of the data.

The cache's high-speed mem-

(continues)



Memory caching is designed into a system and enables manufacturers to use inexpensive RAM with high-speed CPUs. Disk caching relies on standard system RAM and so can be added to any system to speed disk chores.

ANTHONY RUSSO

OUT STANDING IN THEIR FIELD.

We've been recognized for being outstanding in our field because we're committed to our customers. We founded Gateway 2000 to provide *quality computers at aggressive prices with uncompromising service after the sale.* We've done what we set out to do.

1988 BYTE AWARD OF DISTINCTION

Gateway computer systems are assembled by hand in our factory located just outside Sioux City, Iowa. The midwest work ethic is evident in every computer we produce. You'll also find the latest technology in all of our systems.

One look at our prices and you'll see we're aggressive. Most importantly, look at our *commitment to service*. We give you a full one-year warranty which includes *free on-site service* in most locations nationwide. Of course you also receive a 30-day money back guarantee and *lifetime* toll-free phone support.

If you're shopping for real value in a computer system, call Gateway 2000. *You have our personal pledge that you will be completely satisfied!*

Ted Waitt
President

Norm W. Waitt
Vice President

12 MHZ 286 LAPTOP

- Gas Plasma Display Scree
- 2.6 Megs RAM
- 1.44 Meg 3.5" Floppy Dri
- External Port for 5¼" Driv
- 40 Meg 28ms Hard Drive
- 1 Parallel & 1 Serial Port
- Expansion Slot (16 Bit)
- External EGA Monitor Po
- 84 Key Keyboard
- MS DOS 3.3 Installed

$2995.00

2 MHZ 86 VGA

- 286-12 Processor
- Megs RAM
- 2 Meg 5¼" Drive
- 44 Meg 3.5" Drive
- Meg 28ms Drive
- Bit VGA Board
- " Multisynch Monitor
- Parallel & 2 Serial Ports
- 1 Key Keyboard
- S DOS 3.3 or 4.01

2195.00

16 MHZ 286 VGA

- 80286-16 Processor
- 2 Megs RAM
- 1.2 Meg 5¼" Drive
- 1.44 Meg 3.5" Drive
- 40 Meg 28ms Drive
- 16 Bit VGA Board
- 14" Multisynch Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01

$2295.00

20 MHZ 286 or 386SX

- 80286-20 Processor
- 2 Megs RAM
- 1.2 Meg 5¼" Drive
- 1.44 Meg 3.5" Drive
- 40 Meg 28ms Drive
- 16 Bit VGA Board
- 14" Multisynch Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01

$2395.00

20 MHZ 386 VGA

- 1 Meg RAM
- 1.2 Meg 5¼" Drive
- 1.44 Meg 3.5" Drive
- 80 Meg 28ms Drive
- 16 Bit VGA Board
- 14" Multisynch Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01

$2995.00

Upgrade to 4 Megs $400
64K Cache Add $250

Monochrome Systems Deduct $500

25 MHZ 386 VGA

- 4 Megs RAM
- 1.2 Meg 5¼" Drive
- 1.44 Meg 3.5" Drive
- 150 Meg 16.5ms ESDI Drive
- 16 Bit VGA Board
- 14" Multisynch Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01

$3995.00

64K Cache Add $500

33 MHZ 386 VGA

- 64K Cache RAM
- 4 Megs RAM
- 1.2 Meg 5¼" Drive
- 1.44 Meg 3.5" Drive
- 150 Meg 16.5ms ESDI Drive
- 16 Bit VGA Board
- 14" Multisynch Monitor
- 1 Parallel & 2 Serial Ports
- 101 Key Keyboard
- MS DOS 3.3 or 4.01

$5495.00

GATEWAY 2000

GATEWAY 2000 • P.O. BOX 2000
SERGEANT BLUFF, IOWA 51054
IN IOWA 712-943-2000
TOLL FREE 800-523-2000

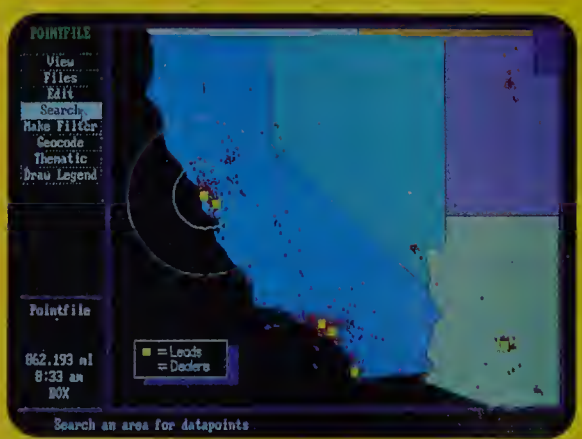
Due to the volatility in the DRAM market, all prices are subject to change.

Circle 227 on reader service card

See Your Data

MapInfo software can find, display and analyze your data geographically. See your prospects, customers, facilities —anything in your database. Find addresses by street, ZIP code, city, etc. (We can even supply the maps.)

Any point or region on the map can have a complete record of data behind it. See your *actual* dBASE data in a window to view, edit, and print. Draw your own boundaries. Add titles and legends for high quality presentations.



Perform analyses on your data to sum, average, or count your database records by location. Color sales territories by volume of orders, ZIP codes by numbers of leads, countries by your demographic data.

From street-level to worldwide, MapInfo can merge your databases with maps. Play visual "what if" with your data. See patterns, trends, and opportunities you never knew existed. If you need to map your data, MapInfo can do it for as little as $750.

MapInfo now includes a map of the world and the U.S. with all ZIP code locations. Runs on IBM PCs or compatibles with 640K memory, a hard disk drive, and graphics, and comes network-ready.

MapInfo™ Corp.

Changing The Way The World Looks At Information™

200 Broadway, Troy NY 12180
To order, call 1-518-274-8673
or 1-800-FASTMAP Toll free.

MapInfo is a trademark of MapInfo Corp. dBASE is a trademark of Ashton-Tate.

Circle 161 on reader service card

ory allows the CPU to write data to cache memory at full speed and quickly return to other tasks. The cache controller then copies the data to its intended destinations at the slower system RAM rate.

Disk caching can be added to any system, either by installing a caching disk controller or by using a memory-resident program that employs conventional, expanded, or extended RAM. Accessing data from even the fastest disk drive is far slower than getting it from memory. So when the CPU requests disk data, the disk cache program (or controller) first checks the cache. If the requested data is in the cache, it's passed quickly to the CPU. If not, the cache program or controller reads the requested data from the disk into the cache. It also reads a few sectors of nearby data, anticipating that the CPU may soon request it as well. The cache then passes on a copy of the requested data to the CPU. When the cache is full and does not contain requested data, newly read data from the disk usually replaces a portion of cached data.

Disk caching can be fine-tuned by the user. Some disk caches let you specify that the cache should not replace certain data (for example, a program overlay) or that certain data should not be cached (downloaded fonts, for example). The size of the cache also affects system performance: If it's too large, you'll spend more time searching the cache than it would take to get the data from disk; if it's too small, you'll waste time looking in the cache for data that's never there.

Spaced Out

Q. *I inadvertently used a space in naming a file. Application programs cannot open the file, and even DOS, it seems, cannot rename or delete it even though it's listed when I execute DIR. I'm sure there's a simple trick to solve this dilemma, but I don't know what it is. Please help!*

David Weber
Rochester, New York

A. Let's assume that your file is named MY FILE.DOC (with a space embedded between the *Y* and the *F*) and that it's in the current directory of the default drive. At the DOS prompt, type the command **dir my?file.doc** and press **<Enter>** to verify that MY FILE.DOC is the first or only file name that matches the mask my?file.doc. If any other file names are listed before MY FILE.DOC, rename those files using a different file name extension. Then type **ren** and press **<F3>** to display 'ren my?file.doc'. Next, type a space and an unused file name and press **<Enter>**. That's all there is to it.

Parking Providence

Q. *I run my system from a menu generated by a batch file. Whenever I exit a program selected from the menu, control returns to the batch-file menu and awaits the selection of another program. Because I was worried that I might jar my PC and damage the hard disk, I added to the batch file a command that parks the hard disk whenever I exit a program.*

It is my understanding that whenever the PC is on, the hard (continues)

"Some write software to maximize the power of the computer. I wrote askSam to maximize the power of the individual."

—Mack McKinney, Ph.D., askSam Systems

askSam, the powerful freeform text and data manager

"I've been programming for almost 30 years and taught database management for years. Yet I was always troubled by the inflexibility of most software. Their restrictions limit individual creativity and lack flexibility for multiple business needs."

The inspiration for askSam

"Then, one day while lying in a hammock, I had the inspiration for askSam. askSam would be a full-featured information management tool that would shape itself to meet the specific needs of the user. The only requirement: It had to be as powerful and as fast as possible.

"While developing askSam, I never assumed I knew how a user would want to operate. The result is a freeform text and data manager that simplifies simple things while providing power for complicated functions. Features include text retrieval, database management with hypertext retrieval, flexible reporting, a powerful text editor and a command language."

What makes askSam so powerful

"askSam is a freeform information manager, which means you don't have to know in advance how you're going to use information. You just enter it, or import it easily from other programs. The document size is unlimited, making it ideal for prospect tracking, litigation support, research, bibliography, etc.

"askSam is used for multiple information needs in firms large and small. It's won numerous editorial commendations, including PC Magazine's "Editor's Choice" three years running."

Order askSam today

"askSam works the way you work and thinks the way you think. If you believe—like I do—that you know better than any software program how to run your business, order askSam today."

askSam Systems

P. O. Box 1428, 119 S. Washington St.
Perry, FL 32347

For more information or to order:

(800) 3-ASKSAM • (800) 327-5726

askSam is a trademark of askSam Systems.

Circle 20 on reader service card

disk is spinning—and wearing out. I've assumed that parking the hard disk to keep it stationary lengthens its life. Am I right?

Doug Russell
Clearwater, Florida

A. Parking moves the hard disk's read/write heads so they aren't hovering over recorded data. While parking the heads guards against data loss due to a hard disk crash (in which a read/write head falls into the spinning disk, gouging the surface and destroying the head), parking does not stop the disk from turning at its appointed 3600 rpm. Furthermore, the next command read from the hard disk (for example, your batch file's "user input" command) unparks the heads. Your hard disk's heads probably never remain parked for more than half a second. To solve this problem, put the "user input" command in a RAM disk and have the batch file call it from there.

There are two additional measures you can take to lengthen the hard disk's life. Consolidating fragmented files with a disk-optimizing program minimizes the stressful jostling of the actuator that positions the read/write heads. So does using the memory-resident utility FASTOPEN (available in DOS 3.3 and later versions). FASTOPEN stores in memory the location of directories and recently opened files so that DOS knows where to move the heads to reread a file without first having to move the heads and reread the directory.

The second tip is a bit controversial. Many users believe that turning the disk on and off is more damaging to the hard disk's ball bearings than the wear caused by constant spinning. I, for one, leave my system on all the time (a screen-blanking program prevents burning in an image).

One thing is certain: No matter how long your hard disk lives, it will eventually die. Back it up religiously.

Fading Memory

Q. *My IBM PC occasionally blanks the screen and displays the message 'Parity Check 1'. At*

"this is a prime example of what a PC-based FAX package ought to be"
—April, 1989

"it worked flawlessly"
—March, 1989

"the Complete FAX/9600—best in its class"
—April 10, 1989

that point, the system no longer functions; I must turn the power off before I can reboot the PC, and any work I haven't saved is lost. I can't find any pattern for this problem's occurrence, nor can I find an explanation for this error in any book. Do you know what's happening?

Also, when I use the diagnostics disk to test my PC's Color/Graphics Adapter and its serial port (which connects my modem), I get the error numbers '516' and '1101'. What do the error numbers mean, and how do I correct the problem?

Mary Frances Wilson
Camden, Arkansas

A. A 'Parity Check 1' error message indicates a problem with system board memory (a '2' would mean there is a problem with memory on an expansion board in one of the PC's slots). To help detect internal memory failures, the PC has a ninth "parity" bit for each 8-bit byte of memory. Each parity bit is set on or off depending on whether its associated byte has an even or odd number of "on" bits, respectively. If, when checked, a parity bit setting is incorrect for its associated byte's number of "on" bits, the validity of that byte is questionable; the system then stops and displays a parity check error message.

The fact that your computer works most of the time (after it's passed its self-diagnostic power-on memory test) and that it passes the diagnostics disk's memory test suggests you may not have a defective memory chip after all. Since the error occurs after you've been using the computer for a while, heat may be a factor.

My guess is that some memory chip isn't firmly seated in its socket, and when the PC heats up, an electrical connection is lost or weakened. If you feel comfortable working inside your PC, turn it off, open it up, and ground yourself to discharge any static electricity, which can damage PC components. (If the PC, though off, is still plugged into a grounded socket, you can ground yourself by touching the power supply's casing.) Then, as you

(continues)

The best way to add a FAX to your office is to add it to your PC with one of The Complete PC FAX boards. You'll save hundreds, even thousands of dollars versus a stand-alone FAX machine.

You'll be able to send and receive FAXs directly between your PC and any Group 3 FAX machine in the world, in the background, while you continue to work. Broadcast to any number of destinations at once. Store and send your FAXs at night, when phone rates go down. Reduce errors and lost pages. Control who sees sensitive information. Avoid expensive courier services and hotel FAX machines when you travel. And eliminate standing in line waiting for the FAX machine.

The Complete PC has a complete family of FAX boards for IBM PC/XT/ATs and compatibles.

The Complete FAX.® A 4800 bps board that operates fully in the background, perfect for home or office use. **$399.**

The Complete FAX/9600.™ Sends and receives at a blistering 9600 bps. **$699.**

The Complete Communicator.™ An entire office on one easy-to-install board. Combines a 9600 bps FAX with a 2400 bps data modem and sophisticated electronic voice mail. Unique Fax Forwarding feature lets you retrieve FAXs when you're away from the office. **$899.**

The Complete FAX/Portable.™ Battery-powered external unit plugs into your laptop's serial port to turn it into a 9600 bps laptop FAX machine. **$499.**

There isn't a more reliable, more dependable way to add FAX capabilities to your PC. Call today for The Complete PC dealer nearest you.
1-800-634-5558.

TheComplete PC

1983 Concourse Drive, San Jose, CA 95131 (408) 434-0145 FAX (408) 434-1048

© 1989 The Complete PC. The Complete FAX is a registered trademark, and The Complete PC, The Complete FAX/9600, The Complete Communicator, and The Complete FAX/Portable are trademarks of The Complete PC.

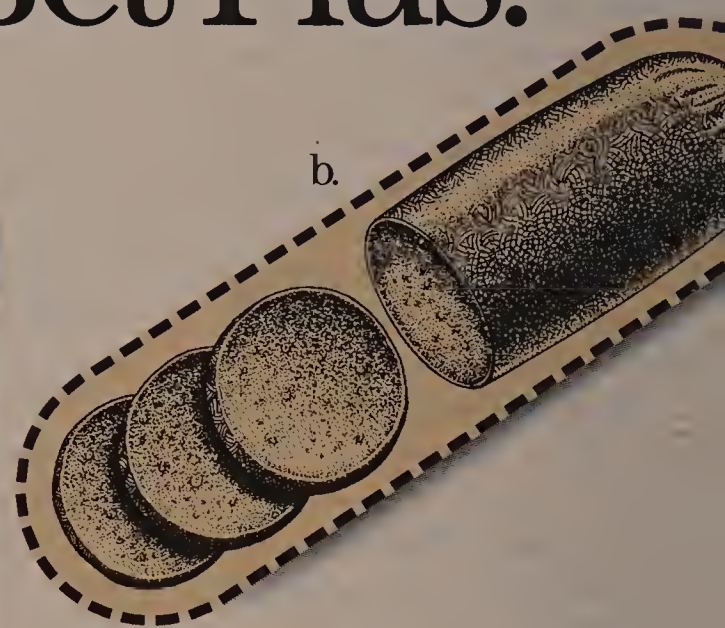
PC Magazine® Ziff Communications Co. Personal Computing © VNU Business Publications, Inc. InfoWorld © InfoWorld Publications, Inc.

Circle 59 on reader service card

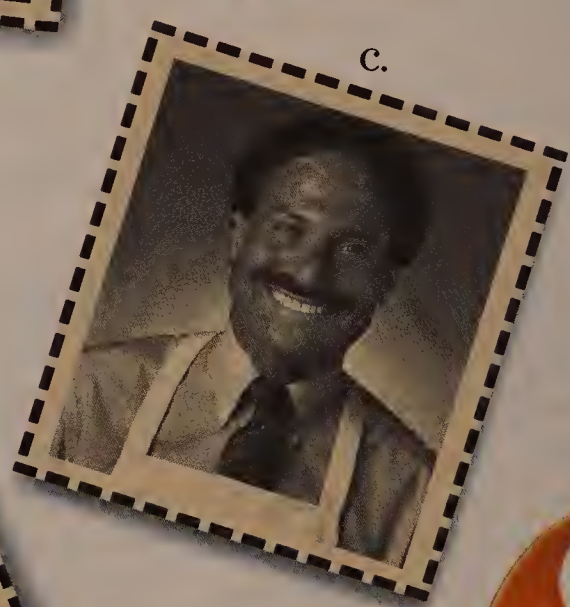
Prove to your boss why you need an HP ScanJet Plus.

a.

b.

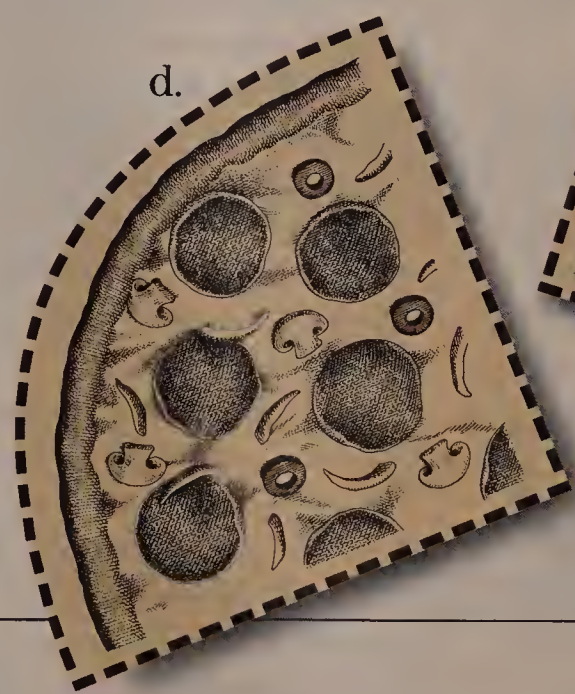


c.



Actual Scanned Images.

d.



*U.S. suggested list price. © 1989 Hewlett-Packard Company PE12918

1. Cut out the photo and illustrations on the left.
2. Put that dull, wordy document down in front of the boss.
3. For the clincher, lay the graphic elements in place.

Presto! The page comes to life, almost as easily as if you'd scanned the images in with an HP ScanJet Plus scanner. Which you can do for just $2,190.* (In fact, all those images came fresh from our scanner.)

This is a small, but tasty, example of how much you can spice up your communications. With photos, illustrations, and, thanks to OCR, text. Its 8-bit power provides 256 levels of gray and lets you scale images from 4 to 200% in 1% increments.

CHEESE LOUISE PIZZA COMPANY

We need to do something to liven up Cheese Louise Pizza sales. People love our pizzas, once they sink their teeth into them. But we're having trouble getting more customers into the parlors.

What's the problem here? We have fresh, natural ingredients. Friendly people. Authentic Sicilian decor, with

a.

Have we got some winners here?

Mount Etna erupting every hour on the hour. Our salads

The best salami. No baloney!

have Frankie's great-grandmother's secret dressing, and people keep telling us they've never tasted anything like it.

Now, for the past two months, we've been handing out 2-for-1 flyers, the best deal in town. But so far, only Frankie's grandmother has come in to get ten for the price of five.

Maybe the flyers are too dull. Maybe the ingredients should jump right off the page and say: Hey, take a bite! But how do we do that? Any ideas?

b.

c.

Joe Louise wants your knockout ideas.

d.

This month's special: CLP TLC

Our scanner also raises the quality of OCR. (And the optional sheet feeder raises the quantity.) And it's equally at home in DOS or Macintosh environments.

So call **1-800-752-0900, Ext. 714G** for your nearest authorized HP dealer. You'll get much more appetizing documents, any way you slice it.

There is a better way.

HEWLETT PACKARD

Circle 88 on reader service card

avoid touching the chip's pins, the back of the adapter cards, and any other electrical circuitry, press each system board memory chip into its socket (the memory chips are next to the speaker, arrayed in four rows of nine chips each). While the system's open, take the time to blow out (don't vacuum) the dust that's accumulated inside.

The diagnostic error number '516' means there's a problem with the PC's character set or that you answered no when, after the character set had been displayed, diagnostics asked 'Is the screen correct?' I'll bet on the latter because you wouldn't still be using your PC if you couldn't read the characters. Error number '1101' means there was a problem testing the serial port. I'm guessing that you didn't use the "wrap plug" that's needed to test the serial port, although your serial port must be fine because you use your modem without incident.

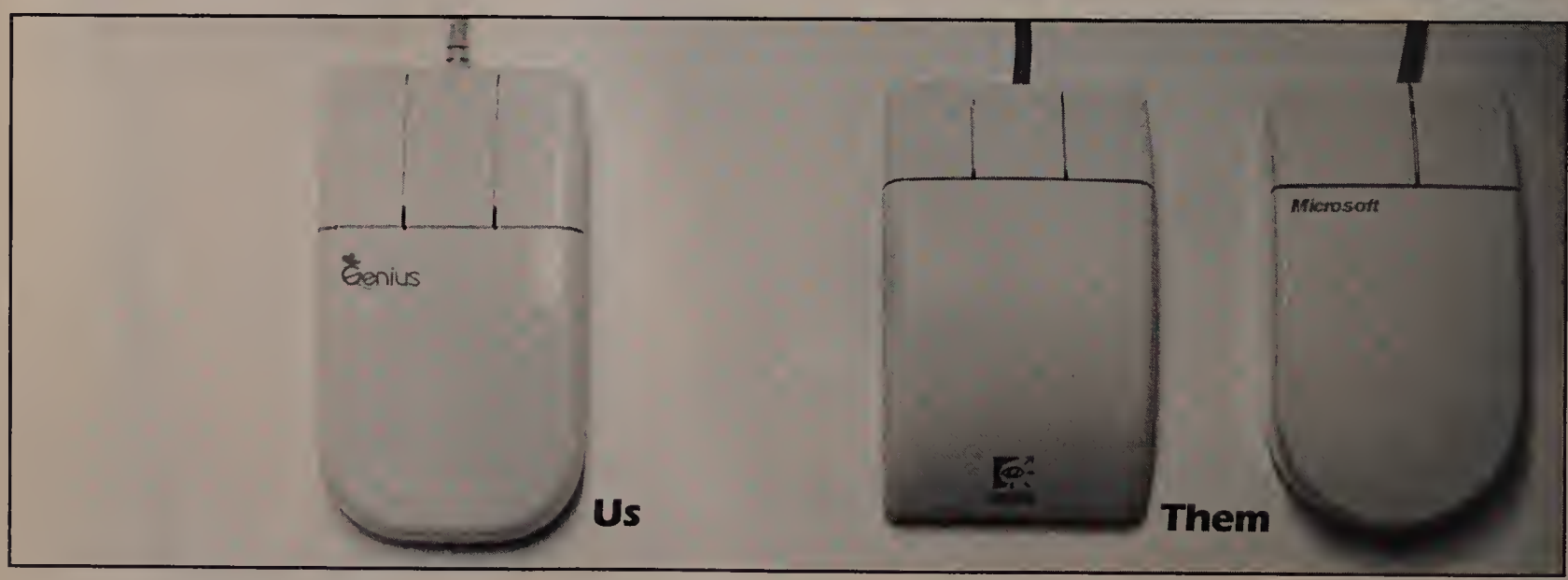
Printing From PFS: First Publisher

Two readers have suggestions regarding how to speed up printing *PFS: First Publisher* documents (see "Buffers and Spoolers Demystified," *The Help Screen, PCW,* June 1989). Both methods begin by having the user "print" the document to a file by entering a drive, path, and file name in the print dialog box's destination field (before "printing," be sure you have selected the proper printer driver). At that point you have two choices.

You can copy the print file to the printer using the command COPY *d:\path\filename.ext* LPT1:/B. The /B, for binary copy, must be included. Or you can use the DOS command PRINT *d:\path\filename.ext* LPT1:/B to print the document in the background, allowing you to continue to use your PC for other purposes. My thanks to Rex A. Wilkerson of Lithonia, Georgia, and Gary Burkhardt of Coldwater, Michigan.

How does...? What can...? Should I...? Send your PC questions to The Help Screen; for details see How to Contact PC World, page 4. ●

IT'S US VERSUS THEM



Above are the three best selling mice in the world. And no wonder. Each of these manufacturers is dedicated to uncompromised quality, state of the art technology, and ergonomic design. However, as you can see, one stands apart, even among these over-achievers. The Genius Mouse GM-F301 rewards those who demand the best with ultra-accurate cursor placement, silky-smooth glide, and a color and texture like polished ivory. The GM-F301 is the only mouse that can be switched between the two mouse modes at any time without having to reboot or reload the mouse driver (should you expect less from the best?), has adjustable dynamic resolution, and includes an X-Y lock feature. And, as with all truly advanced things, the Genius mouse is almost mindlessly easy to plug in and run. Genius-perfect for the beginner or the thoroughly jaded power user. For your nearest dealer, please call **(800) 456-7593.**

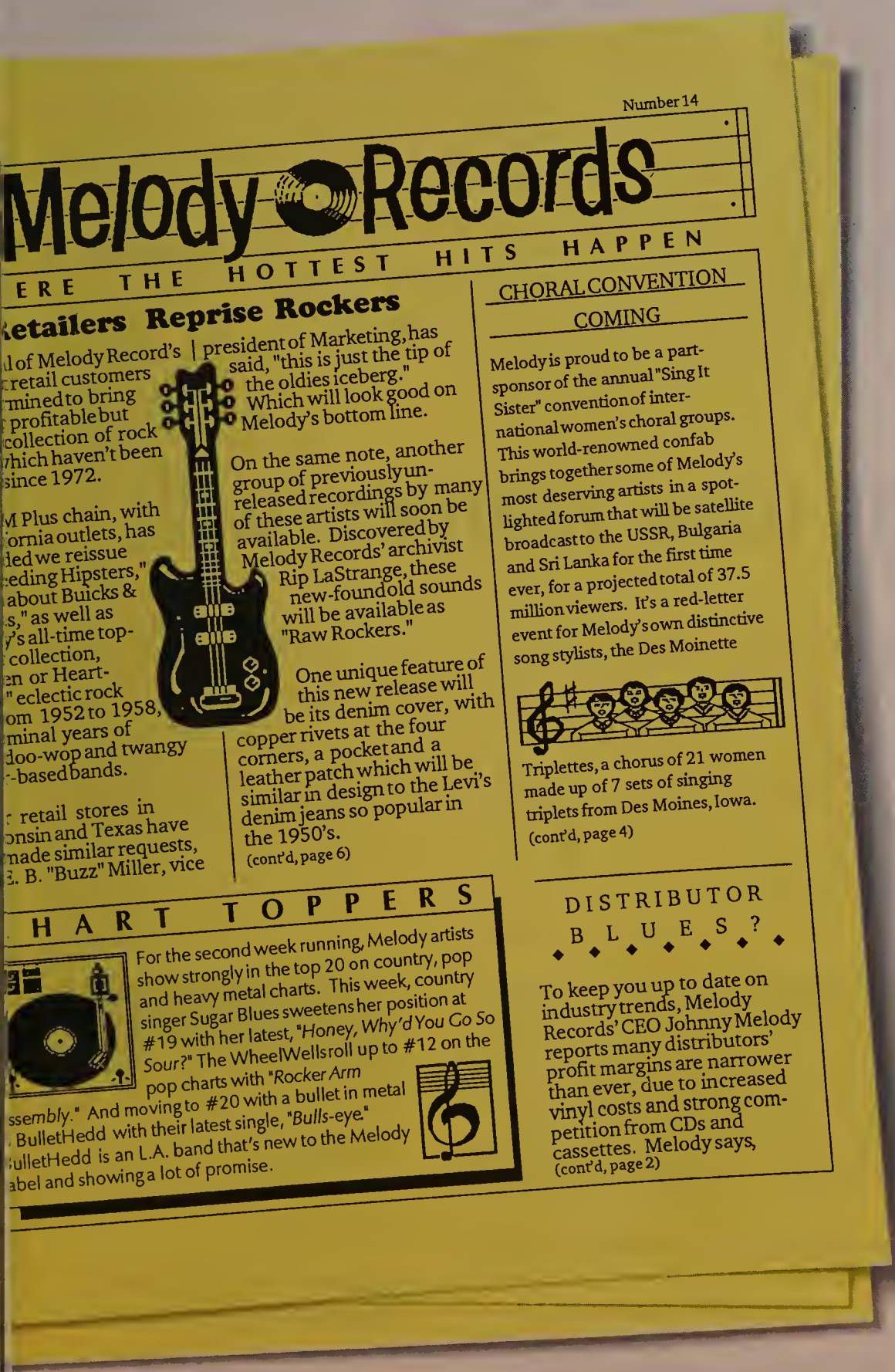
Genius - simply better.

KYE INTERNATIONAL CORP.
PHONE: (714) 590-3940 FAX: (714) 590-1231

Circle 96 on reader service card

First Publisher makes your pages really sing.

For a song.



Number 14

Melody Records

ERE THE HOTTEST HITS HAPPEN

Retailers Reprise Rockers

l of Melody Record's retail customers mined to bring profitable but collection of rock which haven't been since 1972.

M Plus chain, with ornia outlets, has led we reissue eding Hipsters," about Buicks & s," as well as y's all-time top- collection, en or Heart- " eclectic rock om 1952 to 1958, minal years of doo-wop and twangy -based bands.

retail stores in onsin and Texas have made similar requests, E. B. "Buzz" Miller, vice president of Marketing, has said, "this is just the tip of the oldies iceberg." Which will look good on Melody's bottom line.

On the same note, another group of previously unreleased recordings by many of these artists will soon be available. Discovered by Melody Records' archivist Rip LaStrange, these new-found old sounds will be available as "Raw Rockers."

One unique feature of this new release will be its denim cover, with copper rivets at the four corners, a pocket and a leather patch which will be similar in design to the Levi's denim jeans so popular in the 1950's.

(cont'd, page 6)

CHORAL CONVENTION COMING

Melody is proud to be a part-sponsor of the annual "Sing It Sister" convention of international women's choral groups. This world-renowned confab brings together some of Melody's most deserving artists in a spotlighted forum that will be satellite broadcast to the USSR, Bulgaria and Sri Lanka for the first time ever, for a projected total of 37.5 million viewers. It's a red-letter event for Melody's own distinctive song stylists, the Des Moinette

Triplettes, a chorus of 21 women made up of 7 sets of singing triplets from Des Moines, Iowa.

(cont'd, page 4)

HART TOPPERS

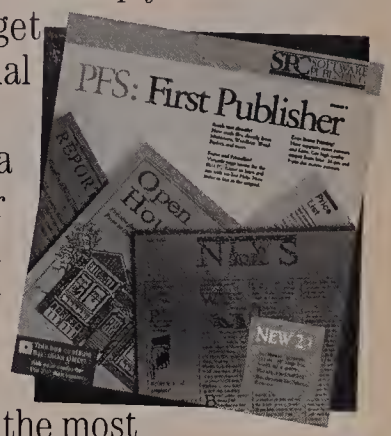
For the second week running, Melody artists show strongly in the top 20 on country, pop and heavy metal charts. This week, country singer Sugar Blues sweetens her position at #19 with her latest, "*Honey, Why'd You Go So Sour?*" The WheelWells roll up to #12 on the pop charts with "*Rocker Arm ssembly.*" And moving to #20 with a bullet in metal BulletHedd with their latest single, "*Bulls-eye.*" ulletHedd is an L.A. band that's new to the Melody abel and showing a lot of promise.

DISTRIBUTOR BLUES?

To keep you up to date on industry trends, Melody Records' CEO Johnny Melody reports many distributors' profit margins are narrower than ever, due to increased vinyl costs and strong competition from CDs and cassettes. Melody says,

(cont'd, page 2)

Easy-to-use, affordable PFS: First Publisher 2.1 from Software Publishing now does even more to help your newsletters and flyers get raves for professional good looks.



It starts with a limited time offer of free top-notch fonts for laser printers. And gives you new features for compatibility with the most popular software and hardware, including WordPerfect™ 5.0 and VGA monitors. Of course, you'll find that help screens, pull-down menus and preformatted templates keep things easy. And with graphic rotation, complex column formats and text wraparounds, you'll have superb design flexibility for more creativity.

You'll get professional quality output with the free disk of Bitstream™ fonts, along with the dot matrix and laser printer support you need for the best results. And for even more design ideas, send in the coupon below.

With PFS: First Publisher 2.1, you'll create great-looking documents that sing your business's praises. At a price you'll applaud.

Call 1-800-255-5550 ext. 536 for new release information.

FREE NOTES ON TYPE DESIGN

Tune up your design skills with free tips on type in a book from Bitstream.™ Just return this coupon with your dated sales receipt showing proof of purchase for PFS: First Publisher 2.0 or 2.1 to: FP Design Booklet Offer, P.O. Box 7210, Mountain View, CA 94039-7210.

Name _____

Address _____

City/State/Zip _____

Offer limited to one per registered user only. Allow 6-8 weeks for delivery. Must be postmarked by December 31, 1989. Not redeemable in store. 53600

SPC SOFTWARE PUBLISHING CORPORATION

First Publisher is a registered trademark of Software Publishing Corporation. All other product names are trademarks of their specific manufacturers. © 1989 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210.

Circle 274 on reader service card

If your business is using Macola Accounting Software, these numbers will interest you:

1.

September 15, 1987
Version 3.0

2.

September 27, 1989
Version 4.0

And if it isn't, these numbers will:

1-800-468-0834 (USA)
1-800-336-8337 (CANADA)

If you haven't seen Macola recently, you should see us now. The experts agree in two consecutive blockbuster reviews... *"the maturity of Macola's product and the attention to detail has earned it top honors in microcomputer LAN-based accounting."*

Introducing Version 4.0. It's simply the most recent generation of an on-going commitment to remain... *"the overall performance winner."* For more information on how Macola's new Version 4.0 can improve your numbers in accounting, distribution or manufacturing, call today.

MACOLA®
SOFTWARE
333 East Center Street
P.O. Box 485
Marion, Ohio 43301-0485
614/382-5999

Accounting Software You'll Never Outgrow.

17 fully integrated packages: Accounting - G/L, A/R, A/P, PR, A/D, Distribution - I/M, COP, P/O, BOMP Manufacturing - MRP, M/S, SFC, L/P,* SPC,* SPR, CRP,* J/C, plus Report Writer. (* Call for availability)

PC Magazine is a publication of Ziff Davis Communications Co. Macola is a registered trademark of Macola, Inc. Copyright 1989.

Circle 183 on reader service card

WINDOWS JOURNAL

Firsthand dispatches from the Windows front

Hewlett-Packard's latest, NewWave, promises a new look in interface design and a new definition of ease of use.

Stewart Alsop

One reason I get the opportunity to complain so much about *Windows* is the nature of the relationship between Microsoft and IBM. IBM struggles to understand new ways of organizing and designing computing systems while still providing reliable service to its customers. Microsoft does its best to figure out how to design graphic interfaces and new operating systems while still trying to satisfy IBM. Meanwhile, the pace of development work on *Windows* suffers as both companies try to find a compromise that meets their common interest.

One advantage Apple has with the Macintosh is that it neither has to sell its software to an IBM nor buy it from a Microsoft. Instead it can focus exclusively on issues that it believes are important to its customers and establish a single set of priorities for its developers. Ironically, Hewlett-Packard has a similar advantage. (The irony is that Apple is suing Hewlett-Packard for infringing on Apple's interface design.) True, Hewlett-Packard licenses the underlying *Windows* software from Microsoft. But it has built *NewWave* in such a way that it doesn't have to worry too much about how Microsoft changes *Windows*. This lets it focus on making *NewWave* a solid, state-of-the-art system for users.

And that is exactly what it has done. In the first customer version of *NewWave*, released this past September, Hewlett-Packard took the first tangible step forward in user interface design since the Macintosh was delivered in 1984. Actually, Hewlett-Packard has taken two steps forward, in the form of objects and agents.

Object-Management Oomph

The first innovation in *NewWave* is its object-management facility (fondly known in Santa Clara, California, home of the *NewWave* development team, as the OMF). The OMF is what makes *NewWave* an object-oriented environment. Ask half a dozen people what *object oriented* means, and you'll get a dozen answers, all wrong. Yet the OMF provides a significant benefit to the user.

The underlying idea is that the system takes a higher level of responsibility than ever before for keeping track of what's going on inside the computer, thereby simplifying the user's job and letting him or her focus on work. Within *NewWave*, everything—software, data, tasks—is defined as an object with a certain relationship to other objects. The OMF manages these relationships. Instead of having to remember that you stored *WordPerfect* and its related files in the WDPFT directory and that you made several directories for different kinds of text files—such as letters and reports—*NewWave* hides the software and the directory system so all you need to remember is that you have documents, which you can open, or print, or send.

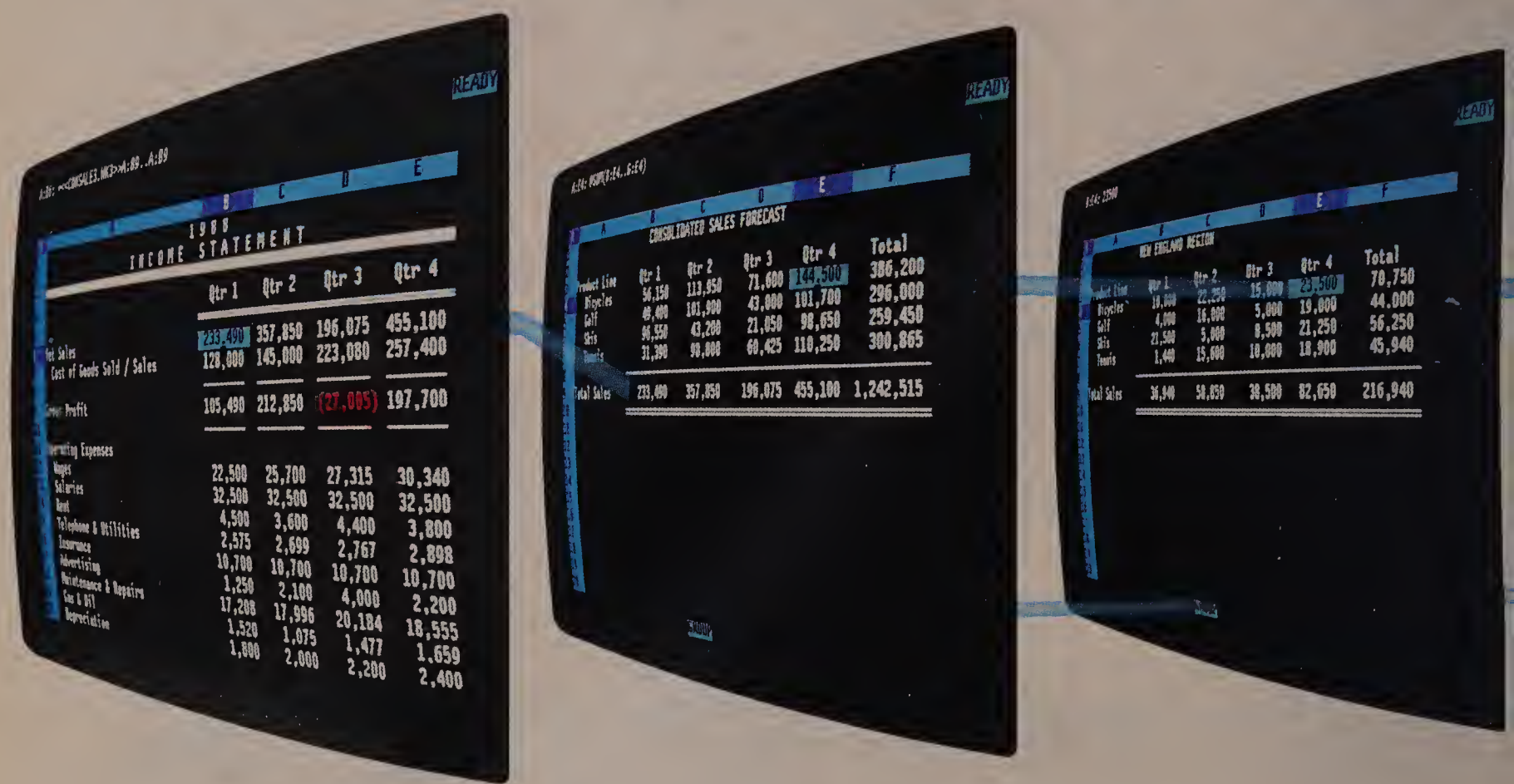
Because you deal only with objects and not with programs and files, you can work in a way that is more like the way you work without a computer. The transition is seamless, and that's the essential benefit of *NewWave*.

Agents: Beyond Super Macros

The second innovation in *NewWave* is what Hewlett-Packard calls agents. Fundamentally, agents are a way to record keystrokes so that the user can automate a series of repetitive

(continues)

Today, the power
a lot to do with the



Release 3's 3D design opens up all kinds of new possibilities to improve the efficiency of your work.

In business, more than ever before, power is a function of information. And nothing can help you exploit the power of data like the new Lotus® 1-2-3®: Release 3 and Release 2.2.

1-2-3 Release 3 lets you manipulate data, navigate through complex applications, and work with more speed, power and ease than any other spreadsheet.

In fact, *InfoWorld* recently was moved to say "...with this new release, 1-2-3 has instantly regained its long-standing position as the sheet to beat."[1]

Much of the credit belongs to Release 3's revolutionary, true three dimensional design, which lets you view and work with up to 256 worksheets and files simultaneously. And its sophisticated file linking capabilities are unparalleled, because you can link worksheets and files in memory, on disk or on a network.

But the advantages of 3D aren't limited to spreadsheets. It also allows you to use the new relational data management capabilities to analyze information from multiple data tables. Release 3's database is simply the most powerful available in a spreadsheet

[1]*InfoWorld* July 17, 1989. *In Canada call 1-800-668-1509. Ask for Department 24. © 1989 Lotus Development Corporation. Lotus and 1-2-3 are registered trademarks of Lotus Development
Hard disk and 1 Mb system memory required in DOS, 3 Mb in OS/2. Lotus certified compatible PC AT with 80286/80386

behind a desk has power on top of it.

You can even bring data from external databases, like dBase III®, directly into your spreadsheet. Without ever leaving 1-2-3.

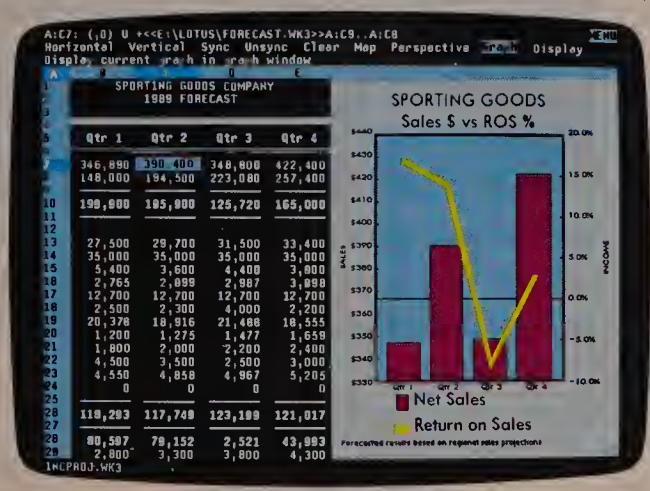
Equally impressive is Release 3's presentation quality output and its selection of advanced analytical graphics.

With the Lotus Add-In Tool Kit for Release 3, you can create a wealth of customized @ functions, macro key words and turnkey applications.

Release 3 is for DOS or OS/2® users. It's designed to fully exploit the 1 Mb of memory that's standard on today's 286 and 386-based PCs.

Those of you who work on all types of PCs in a 640K DOS environment, read on. Because we designed 1-2-3 Release 2.2 to maximize the power in your PC.

Release 2.2 offers remarkable speed and presentation quality output, as well as improved analytical power in the way of file linking, minimal recalc and undo.



Release 3's HotView graph window dynamically links your worksheet and related graph.

Of course, both Release 3 and Release 2.2 provide the highest compatibility with your present 1-2-3 files, macros and applications, and with each other.

There's never been a better time to upgrade to Lotus 1-2-3, because there's never been a better 1-2-3. For more information, contact your Lotus Authorized Reseller. Or, if you're a current user, call 1-800-TRADE-UP.* Ask for Ext. 570 for upgrade information.

Then you'll see firsthand how the new Lotus 1-2-3 will give you more power than ever before.

On the desk and behind it.

The New Lotus 1-2-3

The spreadsheet of choice

Corporation. OS/2 is a registered trademark of International Business Machines, Inc. dBase III is a registered trademark of Ashton-Tate Corporation. 1-2-3 Release 3 runs under DOS or OS/2. processor required. Release 2.2 runs on Lotus certified PCs of all types in DOS with a minimum of 320K system memory.

Use it or lose it!

NEW 750VA MODEL AVAILABLE

Use DataSaver

standby uninterruptible power supply, and protect your customers' microcomputers against costly data loss and hardware damage.

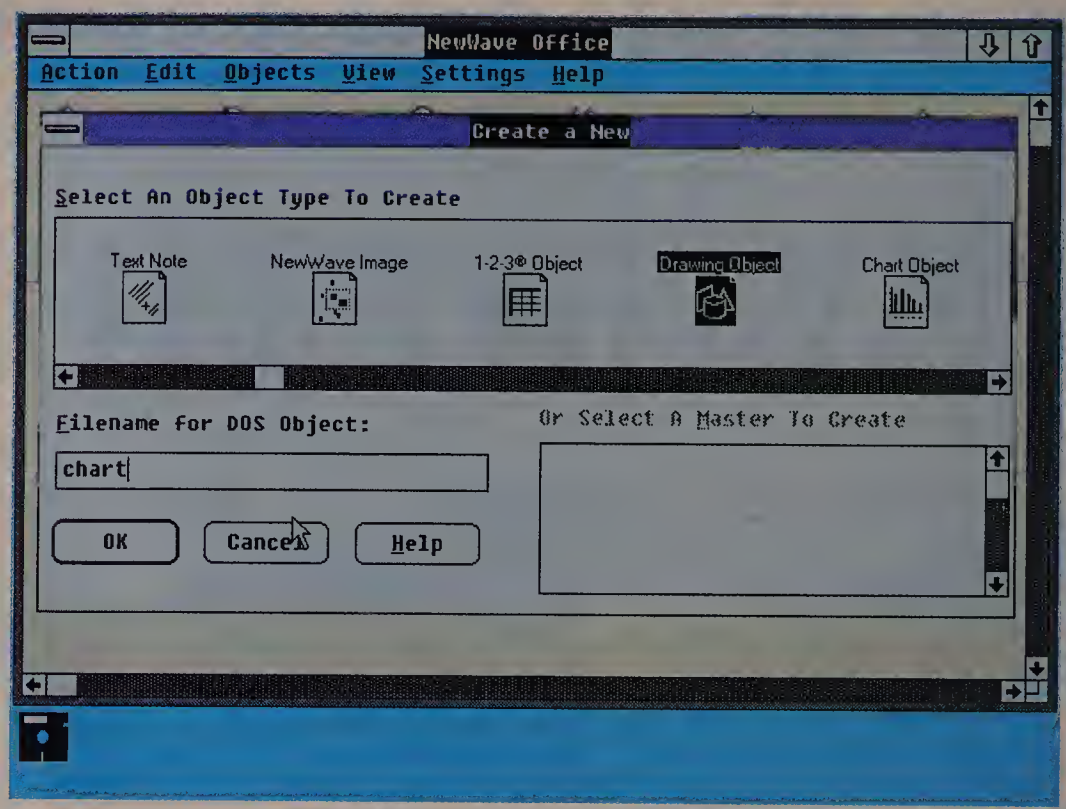
DataSaver delivers:

- Constant AC line protection against power disturbances and interruptions.
- Dealership and profit advantages of selling the highest quality products and dealing directly with the service-oriented manufacturer.

To become a DataSaver Reseller, call: **TOLL-FREE 800/332-3440.**
In California, call 805/541-4160.
Or write to us at the address below.

Cuesta Systems Corporation
3440 Roberto Court
San Luis Obispo, CA 93401

Circle 62 on reader service card



NewWave tremendously expands Windows' power with compound documents. For example, one file could hold text from one program, bar charts from another, and spreadsheet data from a third. Each element is an object linked to its source program and can be edited interactively.

tasks. At first, it's easy to dismiss this capability as a better way of programming the keyboard, a kind of super macro editor. But there's more to agents than meets the eye. Because the system is designed as an object-oriented environment with well-defined relationships between objects, agents can automate tasks that span many different applications.

Say you want to forecast your numbers for the month with *Excel*, graph those numbers using Micrografx's *Graph Plus*, insert the numbers and the graphs into a report created in Samna's *Ami Professional*, and then either send the report to another computer using Future Soft's *Dynacomm* or just print it locally. (All the companies mentioned have promised a *NewWave*-specific version of their software by mid-1990.) The entire process can be built by making each individual portion an agent and then tying the agents together. You automate it by asking *NewWave* to watch what you do and then assigning a name to the process.

The net result is that using *NewWave*—or I should say, doing work in the *NewWave* environment—is a significantly different experience, one in which you spend less time worrying about the computer and more time worrying about how to get your work done. And that's a major advance both for computing and for the *Windows* environment. ●

Stewart Alsop is editor and publisher of P.C. Letter *and a contributing editor for* PC World.

WHERE TO BUY

NewWave
Hewlett-Packard
Corporate Headquarters
3000 Hanover St.
Palo Alto, CA 94304
408/749-9500
LIST PRICE: $195
Reader service no. 700

"I've got to get to the type shop."

"Boy, are my feet killing me."

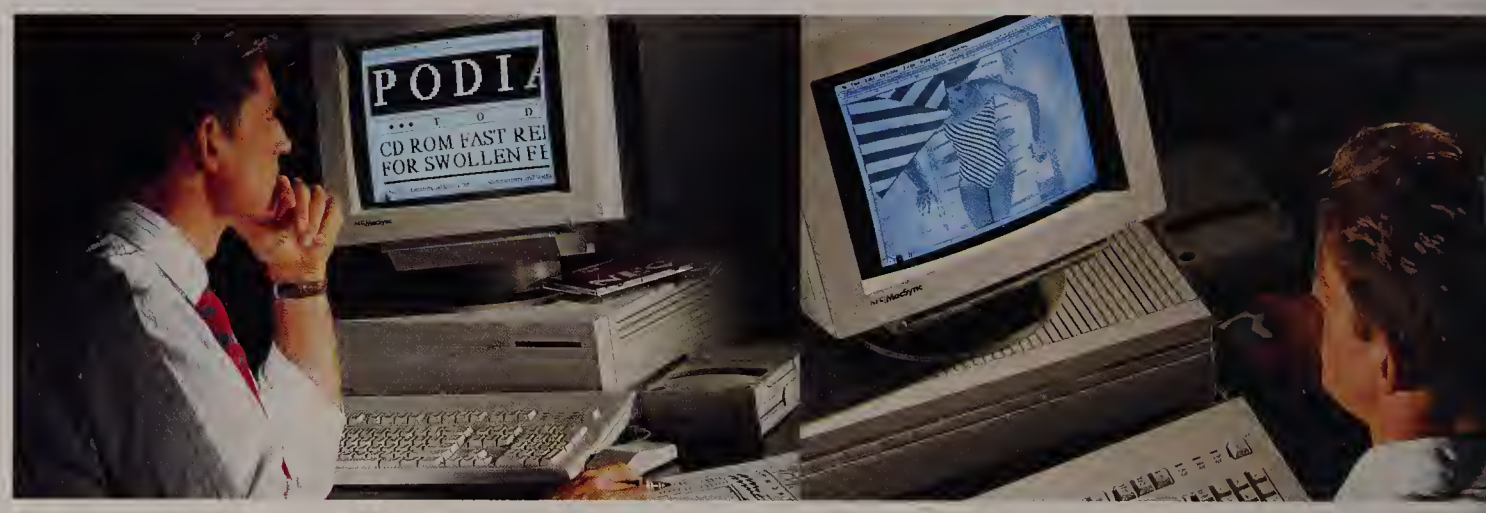
"What do you mean the printer doesn't deliver?"

"Oh no! I'm late for my meeting with the illustrator."

"If they don't have the photo I need here I'm history."

Introducing CD-ROM De

It lets you spend less time using yo



Now you can do all of your desktop publishing at your desk.

You'd better take a seat. Because you're not going to believe all the things you can do. Right from where you're sitting.

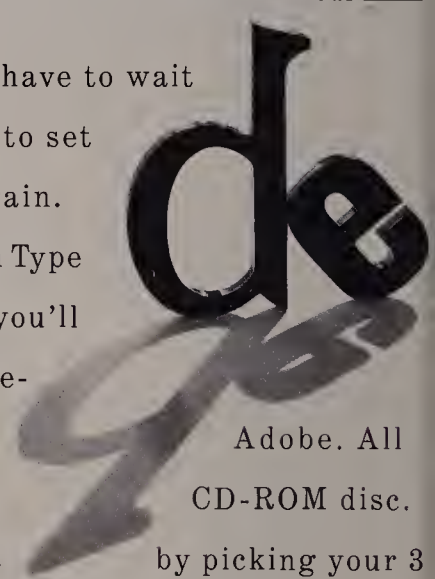
With CD-ROM desktop publishing from NEC.

All you need is a CD-ROM reader, desktop publishing and CD-ROM software and your computer. Then you'll have the tools to put out first-rate desktop publishing. At prices that'll knock your socks off.

You see, ROM stands for "read only memory." So we can give you massive amounts of stock photos, type, 3D clip art and line art.

In fact, there's so much information that you'd need over 3,000 floppies to store what we give you on six discs.

Type Gallery.™ If you want more typefaces, you'll have to buy a Type Shop.



You'll never have to wait for someone to set your type again. Because with Type Gallery PS, you'll have 470 typefaces from Adobe. All on a single CD-ROM disc.

You'll start by picking your 3 favorite typeface families. But if you ever want to buy a font you don't have, just call our toll-free number. Since the rest of the fonts are already on your disc, all we have to do is unlock the ones you want. So in a matter of seconds, you'll be ready to set the type you want. And, like most of our software, it's IBM PC and Macintosh compatible, too.

If you use a LaserJet printer, there's Type Gallery LJ. Seventy-six typefaces on one disc. Including

Publishing from NEC.
t and more time using your head.

pe Director from AGFA Compugraphic. Type Gallery. It's like having a type op right at your desk.

ıoto Gallery™ and Image Folio.™
ıe end of the stock search.

ɔw you can have over 1,500 black ıd white stock photos (from NIPHOTO) right at your finger-ɔs. With Photo Gallery. ıere's everything from ɔple and pets to sail-ɔats and sunsets. What's ore, all the images are available TIFF files, for easy placement. With our Image Folio program, ɔu'll have thousands more photos that ɔu can retouch yourself. There's no cutting. No pasting. And, st of all, no running to the stock house.

lip Art 3-D and Image Gallery.™
you can use a mouse, you can be an ustrator.

ıd you ever think it would be that easy be an artist? Well, with Clip Art 3-D it is. You'll have over 2,500 images you can manipulate any way you like. If that's not enough, there's also Image Gallery. Thousands of high-quality, hand-drawn black and white images (provided by Metro ImageBase) you can scale up or down. Not only that, all the images are stored in TIFF and EPS file formats.

So it's you who'll be creating all the art. Not an illustrator.

It's almost time to get up on your feet again.

After all, you don't have CD-ROM yet so there's probably something you have to run and do. However, you should realize by now that there's only one place you really have to sprint.

Your nearest NEC dealer. Then, we promise, you can hang up your sneakers once and for all.

Image Folio, Type Gallery, Photo Gallery, and Image Gallery are trademarks of NEC Home Electronics (USA) Inc. C&C and NEC are registered trademarks of NEC Corporation. Macintosh and the Apple logo are registered trademarks of Apple Computer, Inc. IBM PC is a registered trademark of the International Business Machines Corporation. LaserJet is a registered trademark of the Hewlett-Packard Company. QMS and Color Script are registered trademarks of QMS, Inc. For more information, contact QMS at 1-800-631-2692. Type Director is a trademark of AGFA Compugraphic Division of AGFA Corporation. Adobe and PostScript are trademarks of Adobe Systems, Incorporated, registered in the USA. Helvetica, Times and Univers are trademarks of Linotype AG and/or its subsidiaries. ITC Cheltenham, ITC Franklin Gothic, ITC Garamond and ITC Korinna are registered trademarks of International Type-face Corporation. Bodoni is a registered trademark of H. Berthold AG. Aachen is licensed from Letraset. Metro ImageBase is a registered trademark of Metro Creative Graphics, Inc. UNIPHOTO is a registered trademark of UNIPHOTO, Inc.
© 1989 NEC Home Electronics (USA) Inc.

Don't just stand there, call NEC:
1-800-826-2255 for literature.
1-800-FONE-NEC for technical advice.
1-800-268-3997 in Canada.

C&C Computers and Communications

NEC

Edited by ERIC BENDER

Who Sets PostScript Standards?

Microsoft, IBM Writing PostScript Alternative

Building OS/2 "Imaging Model"

Adobe president Charles Geschke says PostScript is the only imaging model you'll ever need for display and printer.

At Adobe Systems, PostScript's most remarkable output is cash. Embodied in more than half a million laser printers, the page description language and its spin-offs are logging more than $100 million in sales annually, and more than a quarter of that goes straight into the bank account of its Mountain View, California, creator.

Small wonder that three formidable groups want slices of that pie: PostScript clone hardware is arriving; Adobe's closest ally, Apple, has filed for divorce; and the Microsoft/IBM team is prepping Presentation Manager for a coup.

Like Apple, which is writing an alternative to PostScript, Microsoft and IBM are drafting a blueprint for fancy graphics-intensive applications and high-quality output. The goal: to give users fast, easy, and sophisticated ways to manipulate text and graphics on screen and printer. The means: a "single imaging model" that displays fonts and graphics and prints them *exactly* the same way, offering true WYSIWYG for the first time.

No, the Macintosh doesn't do that. Steve Jobs' famous Next machine comes closest; it employs Display PostScript (Adobe's PostScript-based imaging model) so a file drives the screen and the printer in identical fashion. "Wherever an image goes, it's a Post-Script image," explains Adobe president Charles Geschke. "That reduces the risk of unpleasant surprises." That approach also permits Next to offer a laser printer sans controller.

"A common imaging model is a key factor for future operating platforms," agrees Peter Neupert, Microsoft's senior general manager of OS/2. "We want to make Presentation Manager the richest imaging model." Microsoft need not invent or even own every piece of the technology, he says, "but it's important that we can control the direction."

"For Microsoft, PostScript and Display PostScript are a real threat—almost like somebody else going into operating systems," comments Rob Friedman, president of Bitstream in Cambridge, Massachusetts.

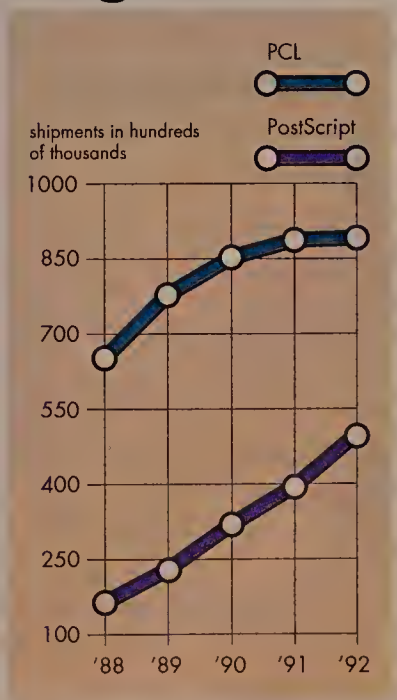
The next step for PM's imaging model (dubbed Graphical Programming Interface, or GPI) is state-of-the-art scalable text fonts. Microsoft and IBM are studying offerings from Bitstream, Compugraphic, and others. Outsiders expect scalable fonts to appear, at the earliest, in OS/2 2.0 in mid-1990.

Microsoft and IBM are encouraging manufacturers to build GPI printers, although GPI lacks suitable printer controls. So Microsoft, QMS, and Epson are taking different slants on GPI devices—helping to ensure customer confusion, comments Jim Upham, director for electronic printers service at Dataquest in San Jose.

PM and Apple's system software will still talk to PostScript printers, says Paul Grayson, president of Micrografx in Richardson, Texas. "Both environments always will provide a generic PostScript driver, and, over time, we would expect it to offer very high quality."

Naturally, Microsoft must work with Adobe to make all this happen. That cooperation is just *(see Microsoft, IBM, p. 70)*

PostScript's Progress



U.S. sales of PostScript-compatible page printers will show steady growth, predicts CAP International, while sales of LaserJets and other printers tailored for Hewlett-Packard's PCL language will plateau in the early 1990s.

Microsoft, IBM

(continued from p. 69)

one thread in a Byzantine web of PostScript alliances between computer vendors, system software suppliers, printer manufacturers, font makers, and application houses.

But only PostScript files work without conversion on diverse personal computers, workstations, printers, and typesetting equipment. "People are accustomed to the connectivity PostScript offers, which will be lost if compatibility is lost," Geschke maintains. Neupert downplays this concern: "PostScript is a vehicle for connectivity, but probably not the best vehicle." But with Microsoft, Apple, and others tooling up, a better vehicle won't arrive soon.

The ability to jump from PC to Mac to printer leaves PostScript "more of a standard than ever," declares Rob Auster, group director for electronic printers at CAP International in Norwood, Massachusetts. "Billions of dollars are invested in PostScript," he points out. "The ball is rolling, and it's so big and so fast that you'd have to invest a tremendous amount of marketing effort to stop it."

But is it still Adobe's ball? Adobe shrewdly emphasizes its standards role, pointing to the difficulties that PostScript clones suffer with Adobe fonts (the clones work fine with fonts from other vendors). Even so, Auster insists PostScript's endless upgrades make Adobe "incompatible with itself."

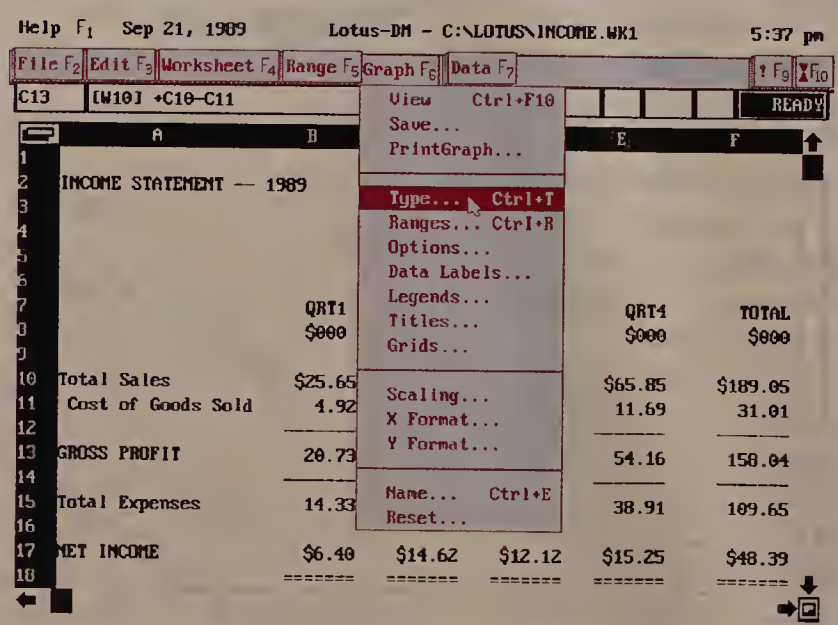
"We're at least as compatible with the PostScript standard as any Adobe [licensee]," claims Bob Downs, vice president for peripherals at Phoenix Technologies in Norwood, Massachusetts. Phoenix, one of a handful of credible PostScript-compatible suppliers, ran 7000 test cases. Downs says the standard is not Adobe's latest version but rather the millions of existing PostScript customer files, which any offering must accept.

Heightened competition already pays off for customers: Adobe has softened its licensing terms, and the clone makers charge still less, slowly helping to depress PostScript printer costs.

But Geschke says that Adobe, which counts more than 30 licensees, won't change its course. The major players in type fonts support PostScript. Adobe is rapidly expanding its font libraries. Display PostScript has attracted broad backing in the UNIX world. And Geschke predicts that technical progress will leave PostScript with the final word. Among advances, Adobe is expected to mute the most common user criticism early next year with a big boost in throughput. —*E. B.*

DeskMate Packages Arrive

Tandy's Interface Gains Backers



Tandy's DeskMate environment is attracting big names.

The first *1-2-3* modified for a graphic user interface will arrive this month or next. But instead of *Windows* or OS/2 Presentation Manager, it's tailored for Tandy's *DeskMate*.

Tandy has shipped well over a million copies of its low-end graphic environment and expects 50 *DeskMate* titles by year-end. *Lotus Spreadsheet for DeskMate* heads the list of recent endorsees, which also includes Symantec's *Q&A Write*.

DeskMate packages can run on 8088-based PCs with 640K of memory or less, and they aim straight at Tandy's core market of cost-sensitive home and small-business users. "This is the highest-growth segment in our market," notes Lotus president Jim Manzi. Symantec president Gordon Eubanks adds that these customers want *DeskMate*'s ease of use and consistency between applications.

Developing *DeskMate* applications "is not that difficult," says Jill Groginsky, product manager for *First Publisher* at Software Publishing. "We did the whole project, start to finish, in six months."

With 7000 outlets, "Tandy is the leading retailer of computers in this country," Eubanks points out. But Tandy's distribution system appears to have two drawbacks. First, Radio Shack stores have never pushed software effectively. "There's usually one person in the store who knows software," says Groginsky. "If he or she is on the floor, they sell software. If not, they sell hardware." Groginsky and Eubanks agree that Tandy is making progress here, but only a handful of *DeskMate* packages can expect attention from Radio Shack staff. And second, while a few independent resellers offer *DeskMate*, sales have been negligible to date. —*E. B.*

What we do with our 386-based computers is interesting. What you do with them, even more so.

PowerMate 386/20

At NEC, we make machines that run on the purest and most precious of fuels. The human mind.

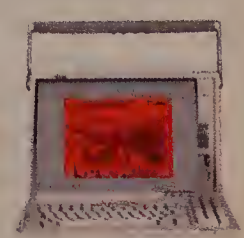
With these machines you come face-to-face with your dreams. Whether they involve building an ocean-going vessel for that once-in-a-lifetime trip around the world, or something more practical, but just as challenging, like complex financial and scientific modeling.

The PowerMate® 386/20 is a high-end desktop computer. Running at 20 MHz, 0 wait states, and with a variety of NEC high-speed disk drives, dreams come true in a hurry with this machine.

PowerMate SX Plus

It's also the perfect network file server.

The PowerMate SX Plus has a 386SX™ CPU that runs at 16 MHz. It ideally positions you to run all of today's 386 software as well as tomorrow's. And it has one of the most popular features in the computer industry: 386 power without the 386 price. Ditto for the PowerMate Portable SX. And being a portable, you can take this machine anywhere your dreams may lead you.



PowerMate Portable SX

As you can see, NEC has certainly done a lot with these machines (you might expect that from a $24 billion world leader in computers and communications). But it doesn't compare to what you'll do with them.

NEC

WE'RE MAKING THINGS BETTER FOR YOU.

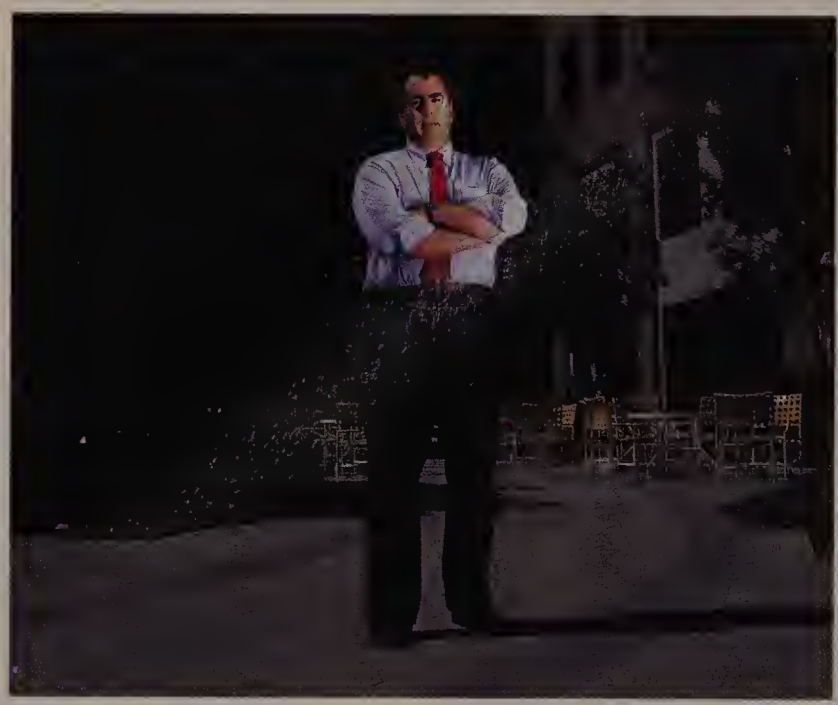
NEC Information Systems, Inc., 1414 Massachusetts Ave., Boxborough, MA 01719. 1-800-NEC-INFO. In Canada, 1-800-343-4418.

C&C Computers and Communications

© Copyright 1989 NEC Information Systems, Inc. PowerMate is a registered trademark of NEC Corp. 386SX is a trademark of Intel Corp. Personal Designer software compliments of Prime Computer.

Ashton-Tate Staggers

Financial Reserves Remain Strong



President Ed Esber ponders Ashton-Tate's challenge from the plaza where he announced a 250-worker layoff.

DARRYL ESTRINE

Battered by criticism, and bleeding red ink, Ashton-Tate is lurching through the second half of 1989. Stung by the market's rejection of *dBASE IV*, the company has been forced to split its data base flagship into two versions—one that simply fixes version 1.0 bugs and one that exploits extended memory and connects to *SQL Server*.

This isn't the first test of Ashton-Tate—nor of company chair Ed Esber, who was hired five years ago under similar circumstances. But it is unquestionably the darkest hour for both.

Last summer, soon after Ashton-Tate posted a $19.8 million second-quarter loss that prompted the resignation of president Luther Nussbaum, Esber revealed yet another delay in attempts to resuscitate *dBASE IV*. He couldn't offer ship dates for version 1.1; beta testers say the standard release could ship by year-end, with the *SQL Server* edition following three months later. But Esber allowed that the third-quarter loss will deepen.

After a grueling early-morning session with press and analysts on August 15, Esber gathered workers in the central courtyard of the company's Torrance, California, headquarters. Visibly shaken, he told them that more than 250 of the company's 1700-plus work force would be laid off. He describes the experience as "the hardest thing I've ever had to do."

The announcement was the first intimation of mortality for a company that has sometimes stumbled but in general has dominated its market and maintained remarkable growth in revenues and profits.

During the past year, Esber has gotten nothing but heat over what he admits was the premature shipment of *dBASE IV* in October 1988. Before that he attracted just as much criticism for *not* shipping the product. The continuing miscues have severely undercut the company's credibility and thrown a cloud over the dBASE language standard. The uncertainty has stalled many corporate development projects and angered add-on developers and consultants who rely on the *dBASE* aftermarket.

Many have deserted the language for one of the so-called *dBASE* add-ons. "I haven't been able to earn a living with *dBASE* for a number of years," reports Tom Rettig, principal in Tom Rettig Associates of Beverly Hills, California, and a member of Ashton-Tate's dBASE Language Advisory Board. "Serious developers must have a copy of *dBASE*, but they use [Fox Software's] *FoxBase* or [Nantucket's] *Clipper* to do their development."

Pat Adams, owner of New York City's DB Unlimited and a founding member of the International Dbase Users Group (I-DBUG), agrees. But she adds that this trend has been nearly invisible; her corporate end-users usually don't know which tool she used to build their applications. Those companies won't desert the dBASE standard, she says. "They have too much invested in the training of thousands of end users, custom soft-

(see Ashton-Tate, p. 74)

Ashton-Tate Hit With Red Ink

Unable to ship a working version of dBASE IV following its October 1988 debut, Ashton-Tate suffered a loss in the second quarter ended June 30, and worse is expected for the third quarter.

hether you write Books, Bible studies, or Baseball cards, your face will match your ideas.

B is for Battle
r Ballet or Bargain-
hunting. Type
can be Bubbly or
igerent, depending
on your mood.

B is for Bold and
Bashful and
Barbaric – Beautiful
are the bountiful
styles a B can be.

B is for Bauble
d Bengal tigers and
Basketball. The
right face supports
your concept
d strengthens your
communications.

The typefaces from
left to right:
Optima oblique,
Kaufmann, Revue,
ITC American
Typewriter medium,
Brush Script, Bodoni bold,
Palatino roman,
Cooper black and
ITC New Baskerville
bold italic.

PostScript people can breathe a sigh of relief. Now there's a typeface for every A, B, or Z you use. Linotype offers you over 130 PostScript font packages with over 550 typefaces for Macintosh and IBM PCs. And the number grows constantly. For your free reference to PostScript fonts available from Linotype, or to place a typeface order, call toll-free: In the USA, 1-800-633-1900 · In Canada, 1-800-387-9553.

Linotype
LIBRARY®

© 1989 Linotype AG and/or its subsidiaries. All rights reserved. Linotype is a registered trademark of Linotype AG and/or its subsidiaries. The Linotype Library, Optima and Palatino are trademarks of Linotype AG and/or its subsidiaries.
ITC Typewriter and ITC New Baskerville are trademarks of International Typeface Corporation. Kaufmann is a trademark of Kingsley/ATF Type Corporation.
PostScript, Macintosh and IBM are the respective registered trademarks of Adobe Systems Incorporated, Apple Computer, Inc. and IBM Corporation.

Ashton-Tate

(continued from p. 72)

ware applications, and live .DBF files to move."

But Ashton-Tate's dealings with developers have never been worse. Unable to deliver on last year's promises of more frequent updates and a better working relationship, Esber indefinitely postponed this year's developers' conference. He isn't sure when the compiler he unveiled last year will ship.

But the focus of developer anger is *dBASE IV*. Esber acknowledges that it was a mistake to wrap all user-requested features into a single product for a 640K machine. The standard edition of *1.1* will be a networkable product that will run in 640K of memory but won't talk to a dedicated data base server. The second release will include *SQL Server* hooks by using Rational Systems' DOS extender technology and will require a 286 machine or better. Anyone buying *dBASE IV 1.0* can step up to either upgrade for free or get both for a nominal fee.

If the strategy works, all will be forgiven and forgotten, says Rettig, because consultants and corporate developers alike would like nothing better than a strong standard. But, cautions Adams, "success or failure depends upon their getting out a good, solid product."

Ashton-Tate has the time to get it right, adds Bahar Gidwani, vice president at Kidder, Peabody & Co. He notes that the firm is sitting on a $90 million cushion—enough to allow it to lose money at its current rate for six quarters and still have cash on the balance sheet. "Their position is actually quite good," Gidwani observes. "They have a dominant share of a large market, a strong balance sheet, and enough cash to weather any problems. There is virtually no chance of their going bankrupt."

While a hostile takeover can't be ruled out, Wall Street looks favorably on Esber's assumption of day-to-day control and his cost-cutting measures. Moreover, Ashton-Tate still faces no serious contenders for its data base crown; its trials are the equivalent of heavyweight champion Mike Tyson's beating himself up. "The good news," says David Bayer, a vice president with Montgomery Securities, "is that the solution to [Ashton-Tate's] problems is in its own hands."
—*Mike Hogan*

Private Eye Adds a New Focus

Tiny Display Is Equivalent to a 12-Inch Screen

The Private Eye provides computer users on the go with the equivalent of a 12-inch screen that fits in a pocket.

TONY CARLSON

Imagine a high-quality PC screen so small you can easily slip it into your vest pocket. Allen Becker imagined one, and then came up with the Private Eye—a tiny "virtual display" that provides the equivalent of a 12-inch screen in a package about half the size of a cigarette pack and weighs a tad over 2 ounces.

You hold it up to your eye, and a screen slightly smaller than a postage stamp shows a clear, bright red image. While the Private Eye isn't meant for prolonged work, its image is very readable—with or without glasses. You can focus the image so it appears to be within 9 inches or on the horizon. You can mount the device on a headset so it sits slightly below your eye and then use it like a bifocal.

Inside the Private Eye, light from an LED bar travels through a magnifying lens, hits a vibrating mirror, and is reflected out to the viewer. This ingenious scheme gives 720 by 268 resolution; VGA resolution will be next. The device will cost manufacturers as little as $100 apiece (in volume) early next year. Becker's start-up, Reflection Technology of Waltham, Massachusetts, shoots for a five-year goal of a full-color, 1000 by 1000 display—"a high-definition TV in a matchbox."

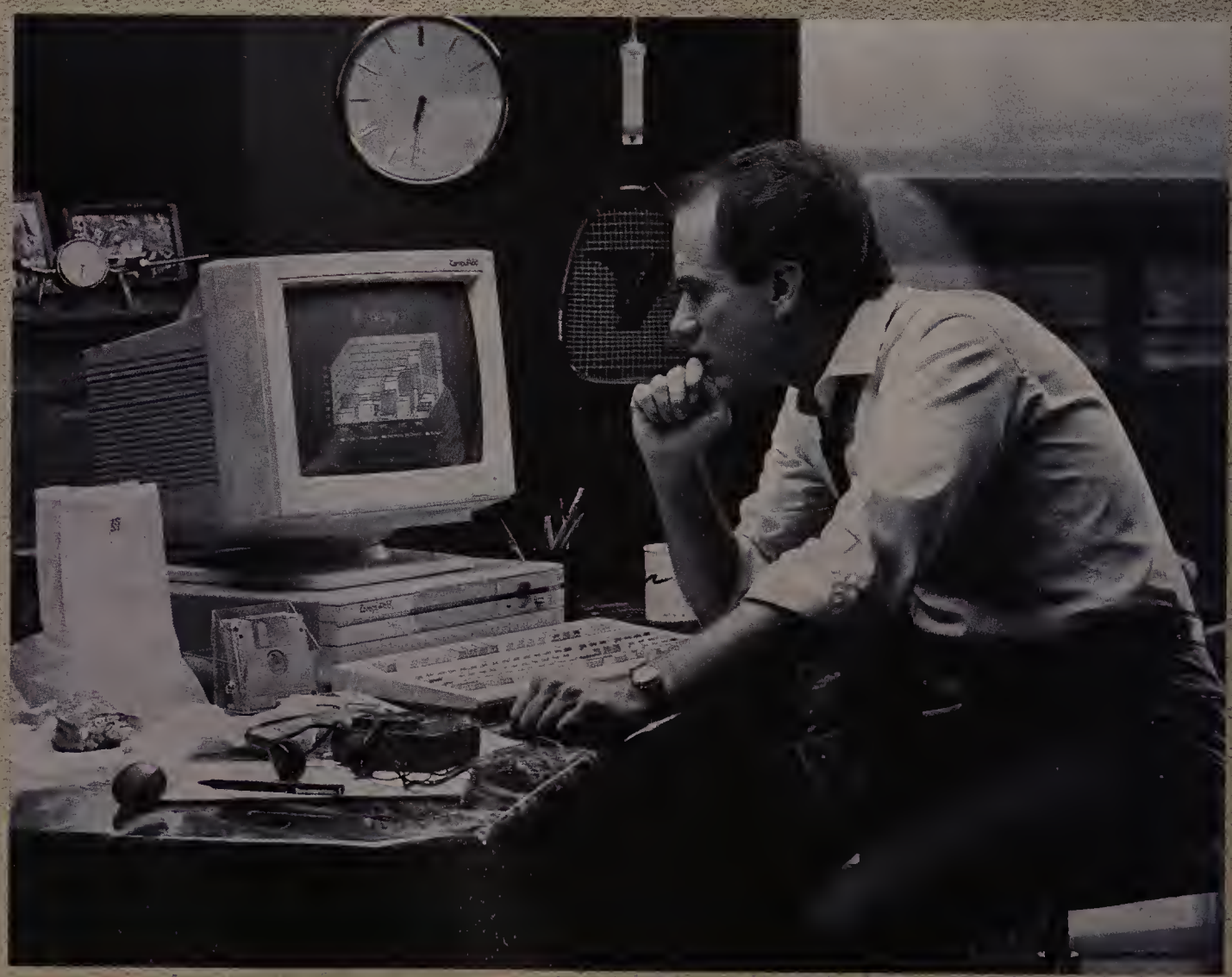
The Private Eye will be used with diagnostic equipment, video games, and paperless fax machines. It's ideal for pint-size PCs because it doesn't depend on ambient light and draws less than half a watt. But while the concept is intriguing, the Private Eye may not fit in everywhere. Observes Mark Eppley, chair of Traveling Software, "Can you picture a business executive sitting in business class on an international flight, wearing a headband with a Private Eye hanging from it?"
—*E. B.* ●

TWO-FISTED MANAGEMENT

©1989 MAREK, 33

You're a new breed in business.

You need a new breed of computer company.



© 1988 CompuAdd Corp.

Today, a new breed of businesspeople are shaking up the old ways of doing things. They work smarter and faster, and they don't need product "badges" to tell them when they've made the right decision.

At CompuAdd, we understand them because we're part of the new breed. We are the first computer company driven entirely by our customers' needs. That means delivering the best value in the market.

Keeping our prices low is key to our business philosophy and that means keeping costs down. We skip the executive lunches and the fancy offices to put our money into more important things. Like top talent to design and build some of the most reliable, compatible and flexible computers you can buy.

Then we offer you the quickest, easiest ways to buy. And the choice is up to you, the customer. Order over the phone or from our catalog. Stop by a CompuAdd Superstore. They're company-owned and staffed, so you get expert assistance plus low catalog prices. Or, if your business computing needs are more complex, have a member of our corporate sales staff call on you.

And we back every computer with exemplary service. Call our technical and customer support center, toll-free. Most problems can be handled over the phone. Or stop by any CompuAdd Superstore repair center. We also offer on-site service within over 260 Memorex Telex service areas, nationwide. For the CompuAdd 220 and above, on-site service is free for one year. Call and you can have a service representative in your office the next business day.

Check our prices, our products, our service. Chances are, you'll find we were made for each other.

1-800-456-6008

CompuAdd 810

Proven XT technology working at 10MHz and now in a price range every home and business can afford. System, $595. As shown, with Color VGA monitor and 20MB hard drive, $1410. Call for monitor and hard drive options.

- NEC V20® processor running at 10MHz.
- 640KB RAM with parity checking.
- Built-in dual IDE hard drive interface.
- Built-in dual diskette drive controller.
- Built-in parallel printer port.
- Two built-in serial ports.
- Three full-size expansion slots.
- Two half-size expansion slots.
- Built-in game port interface.
- 8087 math coprocessor support.
- 5.25" 360KB diskette drive.
- Optional real time clock.
- 101-key enhanced keyboard.
- 145 watt power supply.

CompuAdd 316s

You can open the door to 386SX software at an affordable price. It's a 386 running at 16MHz. System, $1495. As shown with Color VGA monitor and 40MB hard drive, $2539. Call for monitor and hard drive options.

- 80386SX processor running at 16MHz.
- 1MB RAM expandable to 4MB on motherboard.
- 0 wait state page-mode memory.
- Built-in dual IDE hard drive interface.
- Built-in dual diskette drive controller.
- Built-in parallel printer port.
- Two built-in serial ports.
- Five expansion slots: three full-size 16-bit and two half-size 8-bit.
- Built-in game port interface.
- 80387SX math coprocessor support.
- Choice of 5.25" 1.2MB or 3.5" 1.44MB diskette drive.
- Real time clock.
- 101-key enhanced keyboard.
- *One year's free on-site service.*

CompuAdd

Customer driven, by design.™

V20® is a registered trademark of NEC Electronics, Inc. 80386SX, 8087 and 80387SX are trademarks of Intel Corporation.
Prices and product descriptions subject to change without notice. CompuAdd is not liable for damage due to omissions or typographical errors.

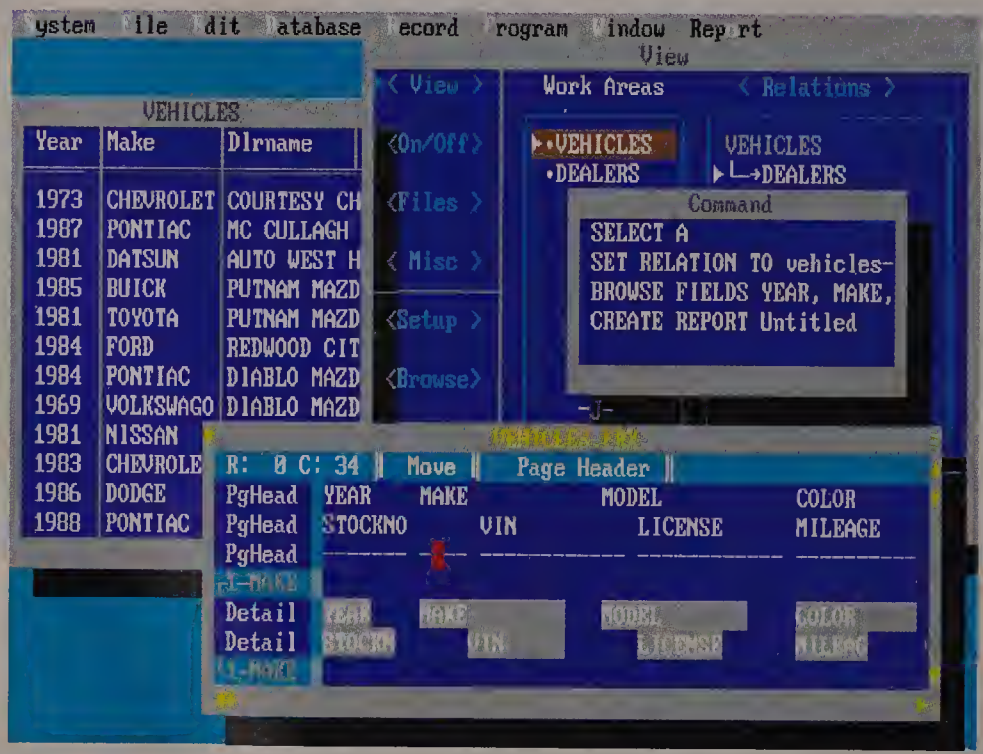
The Fox Turns Pro

More than a speedy dBASE clone, FoxPro adds a windowing environment and a slick report writer —and it's faster than ever.

Alan Schwartz

After releasing the *dBASE*-compatible *Foxbase+ 2.1* two years ago, Fox Software began playing around with the Macintosh to develop ideas for a Presentation Manager data manager. The result was *Foxbase+ Mac*, which deftly wed windows with the dBASE language.

Rather than move up to Presentation Manager, Fox has returned to DOS, delivering Mac benefits in its new *FoxPro* data manager. *FoxPro* sparkles with a character-based windowing interface designed for use with a mouse. A spiffy band-oriented report writer, an advanced text editor, and an animated debugger head the list of added features designed to please developers and casual users alike.



FoxPro's character-based windowing system is faster and easier to use than graphics-based windows. Here, a virtual-join browse and a report-writing session share the screen with a command window. In the background, the View window displays relationships.

PC World previews are informal assessments of products that at press time were still in the development stage. Complete reviews—including features evaluations and performance testing—will appear only after a product is officially released.

FoxPro also boosts the speed and retains the *dBASE* compatibility that earned *Foxbase+* a *PC World* Best Buy (see "Five Against IV," *PCW*, May 1989). But don't expect a bargain: Like *dBASE IV*, *FoxPro* costs $795—twice the price of *Foxbase*.

FoxPro's initial release won't win a features face-off with Ashton-Tate's *dBASE IV*—it lacks SQL and query by example (QBE), and its screen generator is a step behind. Yet *FoxPro* provides enough advances to rank with the heavyweights. It may be the easiest programmable data manager around—and probably the fastest.

Mousing Around

Fox has chosen to emulate a *Windows*-style graphic interface with a speedier character-based environment. Optimally, you'll use a mouse to open *FoxPro*'s pulldown menus, but you can take <Alt>- and <Ctrl>-*key* shortcuts. The menus call up well-designed pop-up windows and dialog boxes. Alternatively, purists can open a window to enter commands directly.

FoxPro lets you open up to 50 windows at once and resize and move them

at will. For example, you can open up to nine browse views while building a report in another window, or type a memo in one window while browsing data in another.

Unlike with *Windows*, you don't have to squint at pixels to grab the edges of windows; it's easy to find the handles on character-based icons. You can expand, scroll, and close the *Windows*-like hot corners at top speed. Color options are extensive, and you can invoke such built-in desktop accessories as a calculator, a file manager, and a calendar/scheduler.

With its View window, *FoxPro* almost matches *dBASE IV*'s Control Center. Here you can manage data files, work areas, indexes, and relationships. A helpful, integrated Browse/Edit window lets you create virtual joins from linked files. You can even specify validating user-defined functions (UDFs) and calculations.

Like *dBASE IV*'s, *FoxPro*'s relational talents are a cut below those of Borland's *Paradox*. Unlike with *Paradox*, users wrestling with complex one-to-many or many-to-many relationships must write procedural code.

Like *dBASE IV*, *FoxPro* has a superb band-oriented report writer, which separates related elements into on-screen rectangles—and *FoxPro*'s menus are more intuitive. *FoxPro*'s report writer doesn't generate code, but it lets you embed UDFs, and it gives an almost instant page preview. In many cases it circumvents the need for QBE. Unfortunately, the FoxView screen painter is unchanged from *Foxbase+*.

Sharper Tools

FoxPro's development tools don't quite match *dBASE IV*'s, but they're easier to use and far more powerful than *FoxBase*'s. The biggest draw is *FoxPro*'s debugger, which takes full advantage of windowing. You can watch variables during command file execution in a debug window, while a trace window highlights the code and lets you point and click at breakpoints.

FoxPro's text editor is a vast improvement over *Foxbase*'s. With clipboard cut and paste, search and replace, and other features, it's even suitable for basic word processing.

Fox has lifted its restrictions on UDFs—you can even include them in reports. And *FoxPro* matches *Clipper* in support for long text strings. In addition, the precompiler creates object code files automatically when you run the source code.

The main programming drawback is the application generator. Tied to the screen generator, it's a step behind the times. A simple code generator, it's faster than *dBASE IV*'s but not nearly as powerful.

Still a Rocket

Although final benchmarks await a shipping product, *FoxPro* appears to be stunningly fast. Informal beta tests tend to support Fox's claim that *FoxPro* is three times as fast as *Foxbase+* and six to ten times zippier than *dBASE IV*.

Unlike *dBASE IV 1.0*, *FoxPro* provides full EMS support, though you don't need expanded memory to enjoy swift performance. While *dBASE IV* sweats bullets to squeeze into 640K, *FoxPro* can run in 512K, aiding network use. Currently, Fox plans no 386-specific version, claiming the performance boost would not be significant.

Fox boasts 100 percent syntax compatibility with *dBASE IV*, but support for the new .MDX multiple indexing awaits a future release. You're still limited to a total of 22 open indexes, but the limitation of 7 open indexes per file has been lifted to 22. Commands can run to 1024 characters, and records to 1024 fields.

Looking ahead, an interim release will upgrade the screen and application generators and provide .MDX indexing. Early next year, version 2.0 should offer an .EXE compiler and a SQL front-end for the upcoming *FoxServer* server (a superset of Novell's *NetWare SQL*). *FoxPro 2.0* will offer a full mixture of SQL and *dBASE* commands.

Unlike *dBASE IV*, *FoxPro 1.0* doesn't try to be all things to all people, but it hits the high points. More important, it successfully eases the inherent difficulty of data management—and it runs faster than ever. Despite *FoxPro*'s steep price, users awaiting a bug-free *dBASE IV 1.1* may find it's time to switch. ●

Alan Schwartz is an independent application development specialist in San Francisco.

SNAPSHOT

FoxPro 1.0

Fox steps out from Ashton-Tate's shadow with a racy character-based windowing interface and a basket of new features.

KEY FEATURES

- **Faster than Foxbase+**
- **Mouse-controlled windowing interface**
- **Band-oriented report writer with speedy page preview**
- **EMS support, but still runs on 512K**
- **Full dBASE IV syntax compatibility**

AVAILABILITY

Scheduled for September

PRICING

$795

Fox Software
134 W. South Boundary
Perrysburg, Ohio 43551
419/874-0162

Reader service no. 606

We make a super VGA monitor

NEC presents the MultiSync® 2A, the best VGA monitor you can buy.

It's the first monitor from the leader in the color monitor industry that's been customized to the needs of the VGA user.

The MultiSync 2A is affordable and uncompromised. And compatible with all VGA modes. In short, it performs brilliantly. But what's equally important, it allows you to move effortlessly to the next major graphics standard: SuperVGA. That's something fixed-frequency monitors like IBM and Compaq can't do.

All this in a monitor that gives you a 14″ non-glare screen on a tilt-swivel base, for nearly 30% more viewing area than standard 12″ screens, as well as a new, ergonomically designed cabinet.

VGA mode shown at 320 x 200

MultiSync is a registered trademark of NEC Home Electronics (USA) Inc.

MultiSync 2A. One super VGA monitor.

IBM is a registered trademark of International Business Machines Corporation.

C&C
Computers and Communications

that's also a SuperVGA monitor.

But that's only part of the story. NEC also presents the best SuperVGA monitor you can buy. MultiSync® 2A.

The monitor that senses the software you're using and makes the switch from a VGA monitor to SuperVGA, the new standard developed by NEC and recognized by VESA. SuperVGA delivers a maximum resolution of 800 x 600, which is 56% higher than VGA.

After all, since you're most likely buying a board that goes beyond VGA, your monitor should too.

The MultiSync 2A is also available in a gray-scale version called the MultiSync GS2A monitor, with a 14″ paper-white flat surface screen.

Compaq is a registered trademark of Compaq Computers Corporation.

Either way, it's one super SuperVGA monitor. For literature call 1-800-826-2255. For information call NEC at 1-800-FONE-NEC.

NEC is a registered trademark of NEC Corporation

VESA is the Video Electronics Standards Association

MultiSync 2A. One SuperVGA monitor.

© 1989 NEC Home Electronics (USA) Inc

NEC

Circle 312 on reader service card

HP Cuts Cost of Laser Printing

The 4-ppm LaserJet IIP brings laser printing within reach of a new audience—with optional PostScript support.

Michael Goodwin

The Hewlett-Packard LaserJet IIP costs about $1000 less than the LaserJet Series II, but all you forfeit is speed (you get 4 pages per minute rather than 8). The small-footprint IIP offers a large 4.5MB memory capacity for full-page graphics and multiple fonts.

PAUL FRANZ-MOORE

Quite a few people who want a LaserJet but balk at spending more than $1000 are about to get a very nice surprise. With the release of the LaserJet IIP—a low-cost, 4-page-per-minute printer based on the Canon P110 engine—Hewlett-Packard has single-handedly reinvented the laser marketplace.

This LaserJet II compatible lists for a deliciously low $1495 (which probably translates to around $1000 on the street, little more than the price of a high-end dot matrix printer). Additionally, it weighs only 25 pounds, puts out a standard 300 dots per inch, and supports an optional PostScript cartridge with scalable typefaces.

While the IIP's 4 pages per minute is only half the rated speed of the popular LaserJet II, in most real-life printing situations you may never notice the difference. You *will* notice the printer's modular design that lets you buy a low-priced entry-level machine and then upgrade at your own speed. The basic unit comes with 512K of RAM, 14 internal fonts, and a 50-sheet paper tray that adjusts for letter- and legal-size paper and four sizes of envelopes. Whenever you're ready, you can add goodies like a 250-page paper cassette, one font cartridge, and up to 4.5MB of memory.

Early in 1990 you'll be able to add a $995 PostScript cartridge with 35 scalable Adobe typefaces. Although this cartridge will require at least 2MB of extra memory, the full PostScript setup (with printer, cartridge, and extra memory) will probably sell on the street for under $3000—far less than any PostScript printer available today.

The IIP is fully backward compatible with the LaserJet line. It takes standard toner cartridges, font cartridges, and downloadable fonts and supports HP's PCL printer language. The IIP is even a little quieter than earlier LaserJets, topping out at 47db rather than 50db.

While a number of low-end HP-compatible laser printers have come onto the market in the last year, none of them approaches the IIP's price and feature set. If this printer comes as a nice surprise for price-conscious laser printer shoppers, it seems likely to prove a very nasty one for HP's competitors. ●

Michael Goodwin is an associate editor for PC World.

SNAPSHOT

LaserJet IIP

Hewlett-Packard's 4-page-per-minute, 300-dpi laser printer will probably sell for $1000 or less on the street.

KEY FEATURES

- **Weighs only 25 pounds**
- **Optional Adobe PostScript cartridge**

AVAILABILITY

Immediate

PRICING

$1495

Hewlett-Packard
19310 Pruneridge Ave.
Cupertino, CA 95014
Call HP sales office listed in telephone directory white pages

Reader service no. 702

The fastest way to see what you think.

Introducing the MultiSync® Graphics Engine™ Board. Now when an idea pops into your head it won't take long to pop up on screen. Because NEC's MultiSync Graphics Engine is the first graphics board specifically designed to increase productivity in Windows, CAD/CAM and desktop publishing applications. For instance, it can run Windows 386 as much as four times faster. When used in conjunction with our accelerator software (purchased separately), Presentation Manager applications run up to five times faster. What's more, the MultiSync Graphics Engine Board is compatible with VGA, Super VGA (800 x 600) and 1024 x 768 interlaced and non-interlaced resolutions. So, whether you're a power user, professional designer or publisher, you can see your ideas on screen in world-class time. For technical details and information, call NEC Home Electronics (USA) Inc. at 1-800-FONE-NEC. For product literature call 1-800-826-2255. The MultiSync Graphics Engine Board. When you've got tons of thoughts racing through your mind, it's the fastest route from head to screen.

MultiSync is a registered trademark of NEC Home Electronics (USA) Inc. Graphics Engine is a trademark of NEC Home Electronics (USA) Inc. NEC is a registered trademark of NEC Corporation. Windows and Windows 386 are registered trademarks of Microsoft Corp. Presentation Manager is a trademark of the International Business Machines Corporation.
© 1989 NEC Home Electronics (USA) Inc.

C&C Computers and Communications

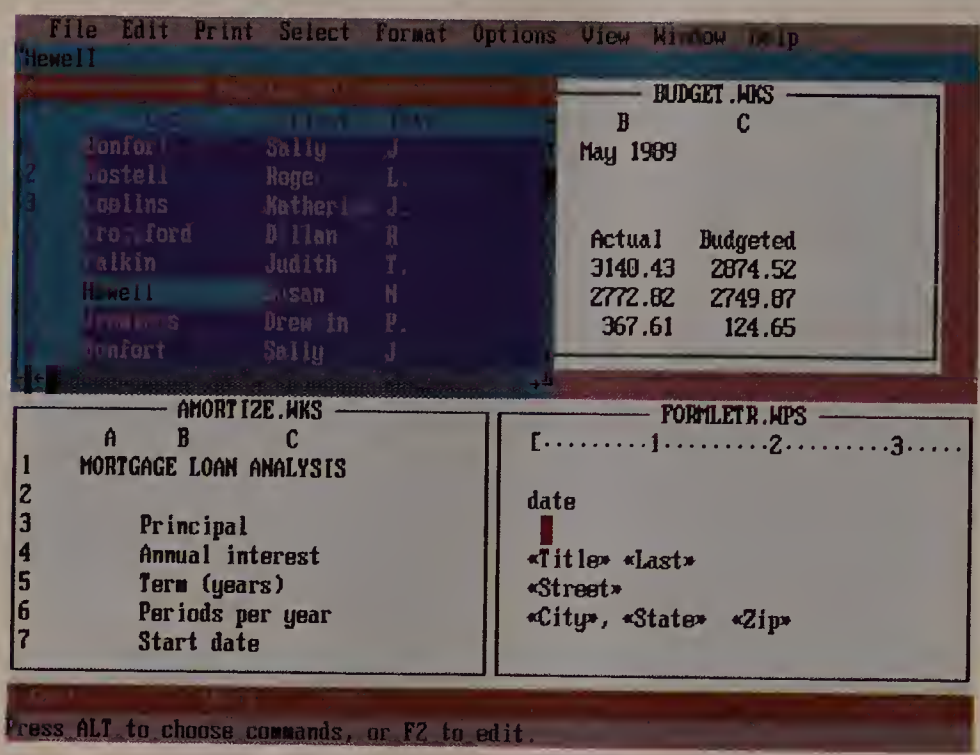
NEC

Circle 164 on reader service card

Improvements in the Works

Microsoft's low-end integrated package gains a host of small enhancements.

William Rodarmor



Thanks to Microsoft Works 2.0's new windowing capacity, you can see and work with multiple files on screen.

Upgrading its popular $149 integrated package, Microsoft has given *Works* more power while adding *Windows*-like touches to a fast character-based application.

Microsoft Works is a prime example of well-designed integration. Version 1.0 offered a first-class spreadsheet backed by word processing and data base and communications modules, all run by a consistent set of pulldown menus and dialog boxes (as noted in *PC World*'s April 1989 review). Version 2.0 incorporates multiple windows, WYSIWYG character formatting, print preview, a 300,000-synonym thesaurus, and EMS support.

The upgrade also smooths a few of *Works'* remaining rough spots. For instance, the utility that converts *Works* word processing files is now built in, as is the macro program. Microsoft has also managed to shrink the manual from a mammoth 700 pages to 400.

Version 2.0 scores big gains in convenience. The package can display up to eight files in side-by-side or overlapping windows and zoom each window to fill the screen. And you can split the screen into two or four panes to see different parts of a file without scrolling. *Works 2.0* lets you copy and rename files, copy disks, create and remove directories, and format and copy disks without exiting to DOS. And thanks to a new applications launcher, you can run your most commonly used programs without leaving *Works*.

The print preview can't zoom or show facing pages, but it displays business graphics, character formatting, and type styles on screen. (Note, however, that you still can't see charts embedded in a worksheet or a word processor document until printout.) *Works 2.0* even includes a pop-up calculator, an alarm clock (with a snooze feature), and an auto-dialer.

Individual modules have picked up a few niceties. Besides the thesaurus, the word processor has gained footnotes and bookmarks. In the spreadsheet, users can fill series and sort rows, and the speed-charting business graphics function is much easier to access.

The data base has put on the most muscle. Need to design a form or fill out a preprinted one? You can print both field names and values, field values alone for preprinted forms, or just field names to create a blank form. Finally, statistical summaries can be copied directly to a word processor document or to a worksheet.

Works 1 was criticized for using proprietary file formats in its word processing and data base modules, and the upgrade ignores that objection. But overall, *Works 2.0* works—quickly and elegantly. ●

William Rodarmor is an associate editor for PC World.

SNAPSHOT

Microsoft Works 2.0

The low-end integrated package smoothly blends word processor, data base, spreadsheet, graphics, and telecommunications modules.

KEY FEATURES

- **Multiple windows, WYSIWYG display**
- **Data base forms generation, better reporting**

AVAILABILITY

Immediate

PRICING

$149, upgrade $50

Microsoft Corp.
16011 N.E. 36th Way
P.O. Box 97017
Redmond, WA
98073-9717
206/882-8080

Reader service no. 701

Go With the Original and Get a FREE DISK

THROWN IN With Our Compliments

Peel off PC WORLD's PowerBase*•* disk sticker and place on square to instantly qualify. You also save 33% off the regular subscription rate.

Move the disk to the right to take maximum advantage of your WordPerfect, Wordstar, Lotus 1–2–3, DOS, dBase III, Paradox, Turbo Pascal, Turbo C, or Basic software.

PowerBase *•* diskette is offered solely by PC World Magazine. It should not be confused with 'power–base' which is relational database software offered by Compuware Corporation.

POWER

Send me one year of PC WORLD, filled with powerful How To tips and techniques, and send me your FREE PowerBase *•* disk with 35 utilities. I'll pay the low 12–issue rate of just $19.97–33% off the regular subscription rate.

4CV96

Put Disk Here To Receive FREE Utilities

Name _____

Company _____

Address _____

City / State / Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S.

PC WORLD

PERFORMANCE

Put me down for one year of PC WORLD's high–performance product reviews, and send me your FREE PowerBase*•* disk with 35 utilities. I'll pay the low 12–issue rate of just $19.97–33% off the regular subscription rate.

4CV96

Name _____

Company _____

Address _____

City / State / Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S.

Put Disk Here To Receive FREE Utilities

PC WORLD

PRECISION

I want one year of PC WORLD's precise analysis of hot new hardware, software, peripherals, add–ons, and upgrades. And send me your FREE PowerBase *•* disk with 35 utilities. I'll pay the low 12–issue rate of just $19.97–33% off the regular subscription rate.

4CV96

Name _____

Company _____

Address _____

City / State / Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S.

SEE BACK FOR DETAILS

Put Disk Here To Receive FREE Utilities

PC WORLD

Attention:
Recipient is entitled to 35 FREE utilities plus 33% off the regular subscription rate.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

Attention:
Recipient is entitled to 35 FREE utilities plus 33% off the regular subscription rate.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

Attention:
Recipient is entitled to 35 FREE utilities plus 33% off the regular subscription rate.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

35 FREE TIPS AND UTILITIES FROM PC WORLD

There are hundreds of utilities you can use to boost your PC's performance. Now 35 of the hottest utilit ideas are yours on one disk– with PC WORLD's PowerBase *•*.

YOU RECEIVE POWERBASE *• FREE WHEN YOU SUBSCRIBE TO PC WORLD.

Mail a reply card today to start tap ping into 35 of PC WORLD's best utilities–free of charge–with PowerBase *•*. You get time-saving tricks for:

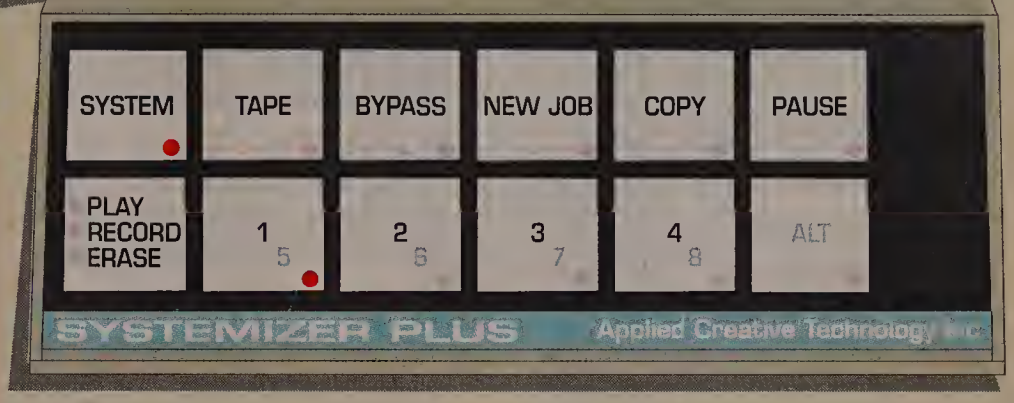
- WordPerfect—Save time by printing envelopes right from a letter file
- Wordstar—Use quick macros for addresses and data entry
- Turbo Pascal —Add windows fo split-screen viewing
- dBase III—Center text in one keystroke and create merge documents for WordPerfect
- Lotus 1-2-3—Total columns with one key stroke or create menus
- Paradox—Optimize file storage
- Basic-Create statements faster
- DOS—Print screens with automatic form feed
- Batch Files—Format disks faster by using both disk drives
- Plus 23 more time-saving utilities!

Receive all 35 utilities FREE and save 33% off the regular subscrip tion price when you mail one of th attached order cards. Mail one today!

Available at Entre' Computer Centers, T.C.B.C., Computer Factory and other retailers nationwide!
(plus: Datamex in Canada)

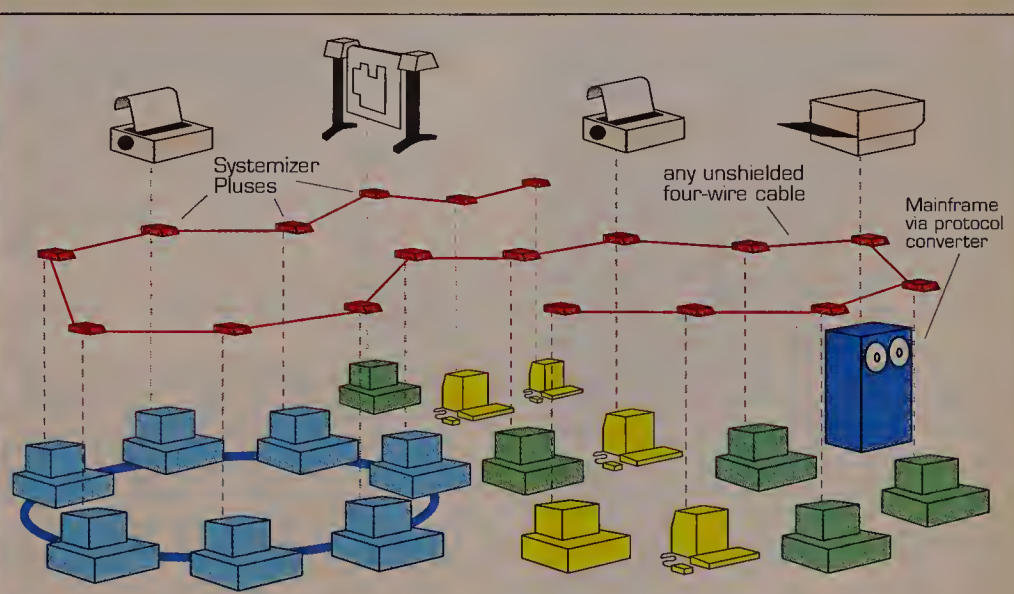
The SYSTEMIZER PLUS

The Universal External Network



Up to 31 users can...

- Share Printers
- Share Plotters *HP-GL Emulation built in!*
- Share a Modem
- Share a FAX
- Exchange E-MAIL
- Transfer Datafiles



Example: 17 micros (mixed brands, some on a LAN) and a mainframe, each equipped with a Systemizer Plus, sharing 3 printers, a plotter, and EMAIL.

Systemizing has become the connectivity standard at many of the world's largest corporations and throughout the federal government. Ten's of thousands are already in use. The new Systemizer Plus is the latest model in Applied Creative Technology's line of Systemizing products, and it delivers what 95% of corporate computer users want from a Local Area Network— at far less cost and complexity, and yet with much more versatility.

Corporate computing managers prefer Systemizing over other connectivity methods because it offers:

- Up to 62 IO ports, each parallel *and* serial capable.
- Compatibility. Mix PC's, LAN's, mainframes, laptops.
- Easy owner installation. Low cost cabling.
- 5 min. user training with no support needed after.
- Flexibility; readily accomodates growth and changes.
- Powerful distributed buffering (up to 31 Megabytes)
- Distributed processing for high speed and reliability.

Call 1-800-433-5373 to get a FREE demo!

The CONNEXPERTS℠
A Division of Applied Creative Technology Inc.
8333 Douglas Ave., Suite 700
Dallas, Texas 75225 U.S.A.
(214) 358-4800
See Us at Fall · Comdex Caesar's Palace, Booth #C521

Copyright 1989 by Applied Creative Technology Inc. Systemizer Plus and Systemizing are trademarks of Applied Creative Technology Inc.

Circle 77 on reader service card

THE AT SERIES

PRINTERS

MONITORS

MODEMS

LAP TOP

NETWORKING

HEAV

REAL MUSCLE. ALL THE POWER AND SPEED ANY COMPANY NEEDS TO HANDLE COMPLEX APPLICATIONS AND GET THE WORK DONE, NOW AND IN THE FUTURE. THE POWERFUL 386 SERIES OF COMPUTERS FROM HYUNDAI. WITH MS-DOS 3.3, BASIC. OS/2 COMPATIBLE. 18-MONTH WARRANTY. 24-HOUR "SERVICE-ON-SITE" OPTION. NATIONWIDE NETWORK OF DEALERS.

1·800 ·727· 6972

SUPER-386c: 8038 PROCESSOR, 8/20 MHz 1MB RAM INSTALLED EX PANDABLE TO 8MB, 64 K ROM, SPACE FO 4 HALF-HEIGH DISK DRIVES: 5.25 OR 3.5", SIX EX PANSION SLOTS

SUPER-386S 80386 SX PROCESSOR 8/16 MHz, 1MB RAM IN STALLED EXPANDABLE T 8 MB, 64 KB ROM WITH 12 KB OPTION. SPACE FO 3 DRIVES: 5.25" OR 3.5 SIX EXPANSION SLOTS.

THE 20 MHz SUPER-386c FROM HYUNDAI.

WEIGHT

Get Practical.
Get Hyundai.

MS-DOS is a registered trademark of Microsoft Corp. OS/2 is a trademark of IBM Corp. © 1989, Hyundai Electronics America. All rights reserved.

HYUNDAI

Circle 113 on reader service card

PRODUCT OUTLOOK

INSIDE PRODUCT OUTLOOK

89 **Dynabook 286**
Modular design makes this laptop a versatile companion on the road and in the office.

89 **Mitac MPS2386**
A more-for-your-money machine might persuade you to take the Micro Channel plunge.

92 **Saros FileShare**
Simplify file sharing on OS/2 networks without sacrificing security.

92 **Kraft Trackball**
Recover lost desk space with Kraft's easy-to-use mouse substitute.

96 **QMS ColorScript 100 Model 10**
The printer and its price are smaller, but you still get color and PostScript.

96 **Hicard Micro Channel Memory Board**
For Micro Channel–equipped PS/2s, a board that supports both extended and expanded memory.

100 **dBASE STATS**
Read and analyze dBASE files directly with a new add-on from Ashton-Tate.

100 **Amdek System/286N**
Amdek's diskless workstation cuts LAN costs and improves security.

104 **Cornerstone XL**
Display complex full-page layouts on this high-resolution display.

104 **PageLaser6**
Toshiba's LaserJet alternative is smaller, lighter, and less expensive—and HP compatible.

UPDATE

108 **Quicken 3**
Intuit's check-register package broadens its appeal with new money-management features.

108 **Microsoft Mouse 400 Series**
Get more action with less effort from Microsoft's high-resolution mouse.

112 **Corel Draw 1.1**
The *Windows*-based illustration package adds a typeface-conversion program.

112 **Objectworks for Smalltalk-80**
The object-oriented development environment generates code that's portable across major hardware platforms.

112 **Lattice C 6.0**
Lattice C's completely revamped compiler helps applications execute 10 to 30 percent faster.

The ultra-slim Dynabook 286's modular design lets you take along only as much portable as you need—just snap display and battery modules onto its 16-MHz 80C286-based CPU.

Dynabook 286

Mix-and-Match Modules for Building a Portable PC

It takes engineering sleight of hand to squeeze the functionality of a PC into a laptop. No one has yet mastered the trick completely, but portable makers like Dynabook Technologies come close.

The Dynabook 286 combines a one-wait-state 16-MHz 80C286 processor with a modular design that breaks down into four elements—CPU, display, battery, and docking module. All are encased in glossy black magnesium, ready to mix and match with each other or with full-size peripherals.

At center stage is the CPU module, which is truly laptop size—11 by 13½ inches and only 1½ inches thick. There's still room for a hard disk and an internal 2400-bps modem, and you can expand the standard 1MB of system memory to 8MB on the motherboard. The VGA-quality monochrome LCD is, likewise, razor thin. But if you want to drive this beauty with a battery, keep the health club membership. Its 2-to-4-hour, 5.4-pound battery pack brings the total weight of the system to just over 14 pounds.

On the other hand, if you'll have a screen and an AC outlet at your destination, you need only carry along the CPU and its AC adapter. In addition to two serial ports and a parallel port, the Dynabook's narrow backplate has an external VGA monitor port backed up by a VGA adapter on the motherboard. Since laptops usually log most of their miles on the home-office shuttle, you can leave your full-size monitor and keyboard and your printer plugged into a Dynabook docking module at home, at the office, or both. The docking module's ports neatly match those on the back of the CPU and include a connector for a future AT bus expansion chassis.

The $3695 Dynabook 286/1A comes with a 3½-inch 1.44MB floppy, DOS 4.01, setup software, and an AC adapter. The LCD display adds another $1000, a docking module is $299, and you can choose a 28ms 20MB hard drive for $500 or a 28ms 40MB hard drive for $1100. Dynabook Technologies Corp., 6150 Stoneridge Mall Rd. #225, Pleasanton, CA 94566; 800/535-4849. —*Mark Henricks*

Reader service no. 675

Mitac MPS2386

This True MCA Compatible Has Real SX Appeal

A 16-MHz 386SX-equipped clone of IBM's Model 55 SX, Mitac's MPS2386 gives you three more slots and two more storage bays for a smaller price.

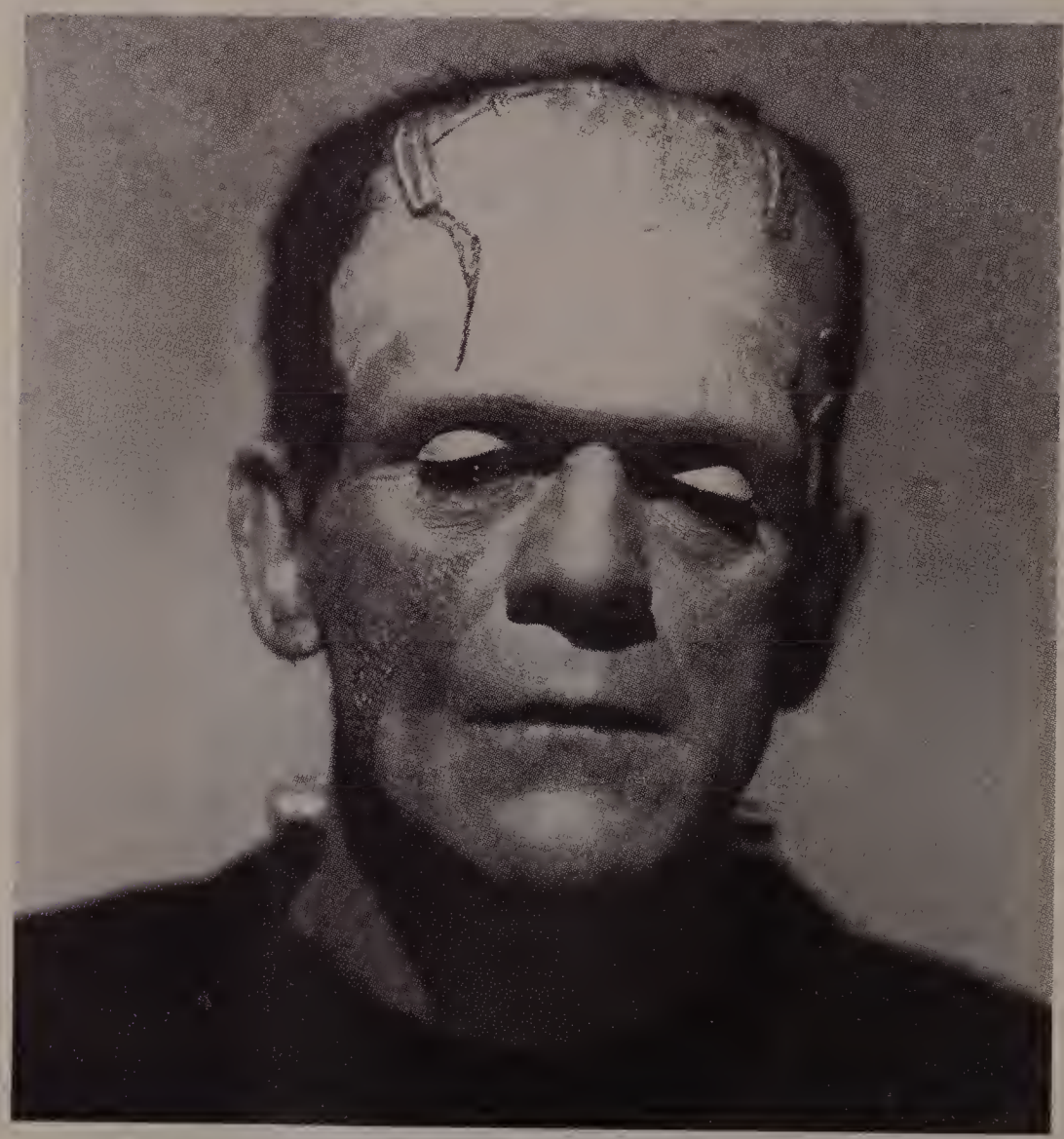
If you haven't swum the Micro Channel yet because you see more breadth and depth in Industry Standard Architecture machines, it may be time to grab your swimsuit. A new 386SX-based Micro Channel compatible from Mitac gives you more computer for less money than IBM's PS/2 Model 55 SX.

The Mitac MPS2386 is built around the same 16-MHz 386SX chip as the Model 55 SX but improves on the 55 SX in several ways. You'll find six expansion slots—compared with the 55 SX's three—in a 14½-by-16½-by-6½ case. (The hard-drive controller will take one slot.) The Mitac system board carries 800 by 600 enhanced VGA graphics; serial, parallel, and mouse ports; and a controller for its 3½-inch 1.44MB floppy.

The suggested list on IBM's 55 SX with 2MB of memory and a 39ms, 30MB hard drive is $3895. Mitac sells the six-slot MPS2386 with 1MB of memory, room for two more 5¼-inch drives than the 55 SX, and DOS 4.01 for $2695. Add $650 for a 28ms, 45MB NEC hard drive and controller and another $320 for an extra megabyte of memory, and the MPS2386 is still $230 below IBM's price tag. American Mitac Corp., 410 E. Plumeria Dr., San Jose, CA 95134; 800/648-02287, 408/432-1160. —*Mike Hogan*

Reader service no. 677

Doctor photographs.



Introducing Gray F/X™ grayscale editing.

©1989 by Xerox Imaging Systems, Inc. Gray F/X is a trademark of Xerox Imaging Systems. All other product names are trademarks or registered trademarks of their respective holders.

XEROX

Magnify images up 1600% for detailed grooming.

Universal or regional control of contrast and grayscale to bring images to life.

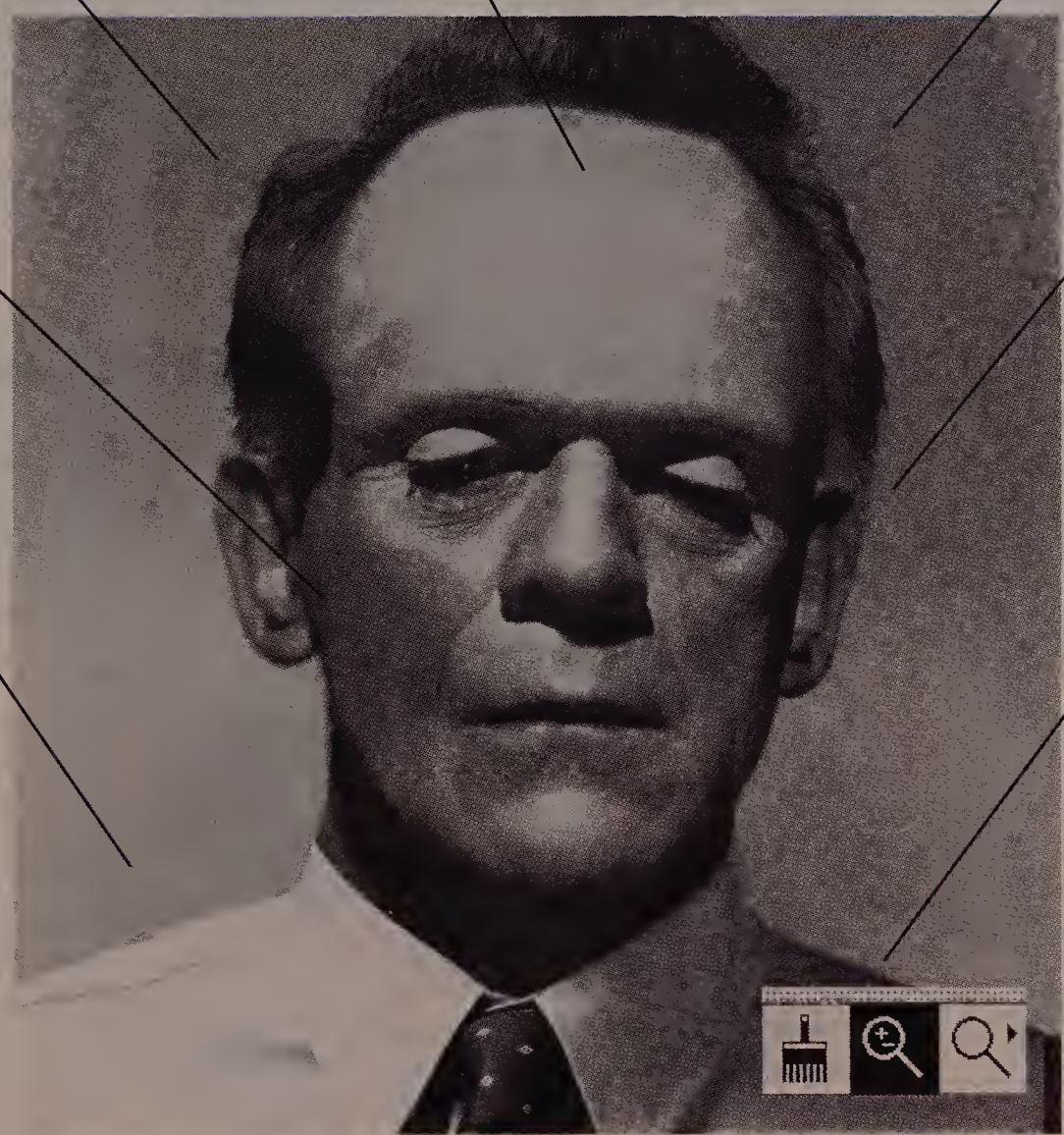
A vast assortment of brush and airbrush tools, from broad to hairline.

Graft portions from one place to another to remove blemishes from originals.

Scale to any size, rotate on three axes, re-form one shape into any other—from ear to ear.

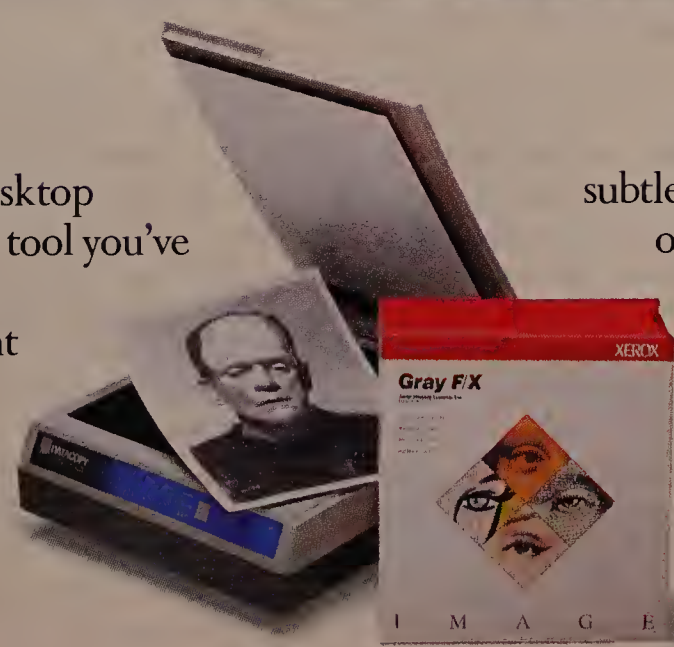
Stitch together multiple images.

Moveable, re-sizable, re-shapable windows free you to concentrate on editing.



If you're doing sophisticated desktop publishing, here is the powerful tool you've always needed.

Gray F/X is the PC equivalent of a professional photolab. Unlike photo manipulation programs that just do a lot of "tricks," *Gray F/X* gives you the range of control and subtlety necessary for high-quality photo output. Even if you're not a surgeon.



Because *Gray F/X* harnesses its power with some of the most manageable and accessible menu windowing ever devised. Find out about all the bells and whistles, as well as the nuts and bolts. Call **(800) 248-6550.**

Datacopy
Xerox Imaging Systems, Inc.

©1989 E. Karloff, represented by The Roger Richman Agency, Beverly Hills, CA.

Circle 283 on reader service card

Saros FileShare

The No-Pain Server Searcher

Once your work group joins hands on a local area network, PC proficiency isn't enough—you also must learn to navigate the maze of network servers and subdirectories. But *Saros FileShare* makes sharing files on an OS/2 *LAN Manager* network as easy as cruising the subdirectories of your own PC, by providing a standard way to distribute files all across the network.

That scheme means you don't have to specify server location and path and file names every time you store or retrieve a document. And if you blank out on the file name, you can still find the document with a quick search by author, subject, date, or other attribute.

During *FileShare*'s installation, the network administrator determines how data files should be distributed across the network's servers for quickest access. Once that's done, when you add a file to *FileShare*, the software automatically stores it in the proper location (for instance, it might route your work group's regular files to a server in your department).

To aid file tracking, *FileShare* draws up a profile for each file on the network. This profile can combine up to 26 file attributes that the system tags automatically (such as user name and date) with up to 20 customized attributes that the user can enter (such as work order number).

FileShare's *Windows* interface makes it easy to combine these attributes and initiate searches. It represents files as index cards so you can skim through a group of related files. The package also lets you save search patterns (such as search by date) for reuse.

You can prevent user access to a given file or specify read-only or read/write access. Other security measures include file-version tracking and automatic storage or trashing of older versions of files.

FileShare works with *Windows*-equipped DOS workstations and requires a LAN operating system that supports OS/2's Named Pipes interprocess communications, such as Microsoft's *LAN Manager*, IBM's *LAN Server*, 3Com's *3+Open*, or Ungermann-Bass's *Net/One*. Prices start at $425 for each 25 concurrent users. Saros Corp., 10900 N.E. 8th St., 205 Plaza Center Bldg., Bellevue, WA 98004; 206/646-1066.

—*Mark Henricks*

Reader service no. 676

Kraft Trackball

Pedal Ball May Put Your Mouse Out to Pasture

Say goodbye to awkward clicking and dragging. Kraft Systems' three-button Trackball saves your arm by letting you use your middle finger to rotate the ball and move the cursor around the screen. The unit also supports an optional foot pedal, which you click instead of the left button.

Mice are nice, but they nibble away at your desk space. Trackballs seem the best alternative to the little cheese burners, since a trackball sits in one place on your desk, and you move a rollerball instead of your arm. The trouble is that clicking and dragging requires an awkward combination of stationary fingers and rolling palm—advanced digital yoga, in short.

Serious trackball users have mastered those moves, but now Kraft Systems introduces the three-button Trackball that attacks the problem in two ways. First, the unit measures 5 by 7 inches—large enough for your thumb and pinky to rest comfortably on the buttons, with your middle finger perfectly positioned to rotate the ball. Second, the unit supports a foot pedal (think of it as one-on-the-floor) that you click instead of the left button.

Installation is simple. The Trackball connects easily to any spare serial port and comes with a pop-up Speed Window utility that lets you adjust resolution from 10 dpi to 1150 dpi or anything in between. You can save your favorite speed setting as a default. The unit works perfectly even if there's a Microsoft bus mouse installed, although the Trackball driver will disable the mouse until the system is rebooted.

The Kraft Trackball, which is Microsoft Mouse–compatible and works with classic PCs or Micro Channel–equipped PS/2s, costs $119.95 without the foot pedal, $129.95 with the pedal. Kraft Systems Inc., 450 W. California Ave., Vista, CA 92083; 619/724-7146.

—*Michael Goodwin*

Reader service no. 679

QUALITY BY DESIGN

GV286/120

- 80286 running at 12 MHz zero wait state.
- Proprietary, 32KB on-board RAM cache circuit using high speed (35ns) static RAM.
- 640KB RAM, expandable to 1MB on motherboard.
- Socketed for 8MHz 80287 math coprocessor.
- 5.25″ 1.2MB or 3.5″ 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- Enhanced 101-key keyboard.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 200-watt power supply.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diagnostics.
- Motherboard designed and manufactured in the U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

PC MAGAZINE EDITOR'S CHOICE

OPTIONS

- RAM upgrades.
- Intel 80287 math coprocessor.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
4MB, 23ms, ST506	$2,149	$2,499
1MB, 27ms, ST506	$2,409	$2,769
55MB, 18ms, ESDI	$3,299	$3,599
20MB, 18ms, ESDI	$4,099	$4,399

Ask about our Lease/Purchase Agreement"

GV286/20

- Choice of slimline or Baby "AT" desktop, space-saving footprints available.
- Top performance at lower cost.
- VLSI technology for increased reliability.
- 80286 running at 20 MHz zero wait state.
- Paged-interleave Memory Architecture.
- 1MB RAM standard, expandable to 2MB or 4MB configurations on motherboard.
- Socketed for 10MHz 80287 math coprocessor.
- 5.25″ 1.2MB or 3.5″ 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- Enhanced 101-key keyboard.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 200-watt power supply.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diganostics.
- Motherboard designed and rnanufactured in U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

OPTIONS

- RAM upgrades.
- Intel 80287 math coprocessor.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
44MB, 23ms, ST506	$2,695	$3,095
90MB, 18ms, ESDI	$3,395	$3,795
155MB, 18ms, ESDI	$3,995	$4,395

GV386/20 PLUS

- 80386 running at 20 MHz zero wait state.
- 1MB RAM on motherboard.
- System is capable of expanding to 16 MB of 32-bit RAM.
- Proprietary, 64KB on-board RAM cache circuit using high speed (35ns) static RAM.
- Socketed for 20MHz Intel 80387, or 20MHz Weitek 3167 math coprocessors.
- 5.25″ 1.2MB or 3.5″ 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- 2, 8-bit, 4, 16-bit and 2, 32-bit memory expansion slots.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diagnostics.
- Motherboard designed and manufactured in U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

OPTIONS

- RAM upgrade to 3 MB add $725-to 5 MB add $955.
- 20MHz Intel 80387 and 20MHz Weitek 3167 math coprocessors.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
44MB, 23ms, ST506	$3,399	$3,699
71MB, 27ms, ST506	$3,659	$3,959
155MB, 18ms, ESDI	$4,399	$4,799
320MB, 18ms, ESDI	$5,199	$5,599

GV386SX

- Run 32-bit operating systems, applications software, or Windows 386 at a lower cost.
- Slim-line, space-saving desktop configuration.
- 80386SX running at 16 MHz zero wait state.
- 2MB RAM standard, 4MB capacity on motherboard.
- Socketed for 16MHz Intel 80387SX, math coprocessor.
- 3.5″ 1.44MB floppy drive.
- Western Digital 1:1 interleave dual controller.
- VLSI technology for increased reliability.
- Graphics adaptor features a full 256K of video RAM and 16-bit interface for full VGA capabilities.
- 2 serial/1 parallel port standard (on add-in card).
- ROM based set-up and diagnostics.
- Motherboard designed and manufactured in U.S.A.
- Toll-free technical support.
- One-year factory warranty, parts and labor. Overnight parts replacement available.

OPTIONS

- RAM upgrade to 4MB add $390.
- 16 MHz Intel 80387SX math coprocessors.
- On-site service agreement.
- MS-DOS 3.3. or 4.01.
- 256 Video upgrade $99.

NEW PRICES	VGA Mono	Extended VGA Color
44MB, 23ms, ST506	$2,795	$3,195
90MB, 18ms, ESDI	$3,495	$3,895

Call us for NETWORK SYSTEMS CONSULTING

WE CARRY SIMMS AND MATH COPROCESSORS

PC Designs

Since 1985

2500 North Hemlock Circle, Broken Arrow, Oklahoma 74012

For Export call: (918) 251-5550 • Local: (918) 251-7503 • Sales (918) 251-5550 • (800) 627-4248 • FAX (918) 251-7057 • EBBS (918) 252-9137

CALL DIRECT TODAY! **1-800-627-4248**

VISA MasterCard C.O.D. *APPROVED P.O.s/TERMS

*PRICES SUBJECT TO CHANGE WITHOUT NOTICE. *INTEL IS TRADEMARK OF INTEL CORP. RESTOCKING CHARGES MAY APPLY TO RETURNS. ALL OTHER BRAND NAMES MENTIONED ARE A TRADEMARK OF THEIR RESPECTIVE MANUFACTURERS.

Circle 152 on reader service card

LAN Version Now Available Call 1-800-634-8670 For Details

MIRROR III™ Full Spectrum Data Communications

From the occasional user to the experienced professional, today's PC communications software needs to cover the full spectrum.

Pre-programmed access to most popular dial-up information services • "Learn" mode to create your own log-on sequences • Dialing Directory • Installation and System Diagnostics • Comprehensive "HELP" system • 100% Crosstalk® XVI compatibility.

Background mode: Start a file transfer and switch to running another program while MIRROR III handles the transfer behind the scene.

Ultra High-Speed modem support (19,200 bps), or direct connect (up to 115,200 bps).

Host system connectivity with terminal emulations including: DEC VT 100/220 series, IBM 3101 (with block mode), Televideo 925 and Wyse-50.

File transfer protocols: XMODEM, YMODEM, KERMIT, Crosstalk, Hayes, CompuServe-B and ACT (the latest in data compression).

PRISM: Introducing the most powerful data communications programming language. PRISM provides: Form/Menu generation; real, integer, string, and array variables; File I/O and the ability to integrate MIRROR III with foreground applications. A script file protection/compression utility is also provided.

"If your communications needs are more than MIRROR III can handle, they must be specialized indeed."
Tom Bigley & Glen Tapanila, InfoWorld, May 8, 1989.

INFO WORLD BEST IN ITS CLASS

INFO WORLD EXCELLENT VALUE

To order, Call: 1-800-634-8670
60-Day Money-back Guarantee

$99.95

VISA/MasterCard/COD. $5.00 for Shipping and Handling ($8.00 for COD orders). Florida residents add 6% sales tax.

MIRROR III is for use on IBM and 100% compatibles (including the IBM PS/2) running MS-DOS 2.0 or higher.

Crosstalk is a registered trademark of DCA, Inc./CommPressor™ is a trademark of ACT, Inc.

SOFTKLONE℠

327 Office Plaza Drive
Tallahassee, Florida 32301
Telephone: (904) 878-8564
FAX: (904) 877-9763

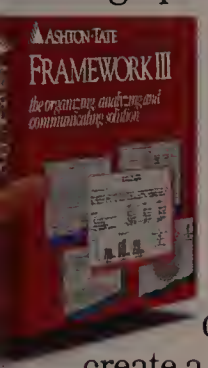
Circle 236 on reader service card

Avoid the ins and outs of other software packages.

Today's manager has to juggle dozens of different tasks. But dealing with the ins and outs of different software packages shouldn't have to be one of them.

Now there's Framework III,™ the one program that does everything a manager needs to do.

Framework III is a tightly linked set of the six most often-used functions you'll find on a computer: word processing, spreadsheet, database, outlining, graphics, and communications.



You use the same easy-to-learn interface for all of them. So you can concentrate on managing your business. Instead of managing your software.

For example, you can interrupt word processing to log on to a mainframe; get needed data; jump into a spreadsheet; use the data to create a graph; import a file from dBASE® products, Lotus 1-2-3® or WordPerfect®; and insert it into your document. Without ever leaving the program. It's that simple.

And you won't have any trouble keeping track of it all, because Framework III lets you open as many windows as you'd like to—simultaneously.

There's even a version for local-area networks. Framework III LAN simplifies the job of coordinating your workgroup. You can use its built-in electronic mail to circulate memos. Or create complex documents that require input from several people.

Would you rather carry around six programs, or one?

What does it all add up to? A product that offers a more efficient way to organize your thoughts, analyze your information, and communicate your decisions.

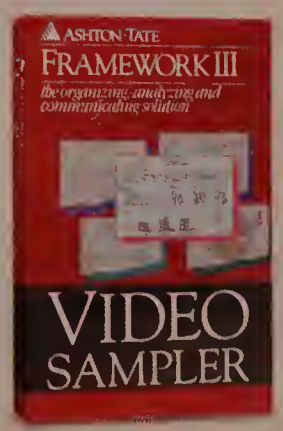
Which is, when you think about it, a more efficient way to manage your business.

Free Video.

To get the complete picture of what Framework III can do, just call 1-800-437-4329,* ext. 3044, and we'll rush you a free videotape that explains it all.

Framework III. It's all the software you'll ever need.

ASHTON·TATE®



*In Colorado, call (303) 799-4900, ext. 3044. Trademark/Owner: Framework III, dBASE, Ashton-Tate, Ashton-Tate logo/Ashton-Tate Corporation; Lotus 1-2-3/Lotus Development Corporation; WordPerfect/WordPerfect Corporation. © 1989 Ashton-Tate Corporation. All Rights Reserved.

MHS™ BY ACTION TECHNOLOGIES

QMS ColorScript 100 Model 10

Color PostScript in a Smaller Box for a Smaller Price

QMS puts color and PostScript together in the ColorScript 100 Model 10, a downsized printer with a $10,000 price tag.

QMS was the first to pack color and the PostScript page description language into one box, but the original price for its ColorScript 100 Model 30 was $25,000. Now comes the one-third–smaller ColorScript 100 Model 10, which ships with less memory and prints smaller pages—and sports a price tag of a "mere" $10,000.

The ColorScript 100 Model 10 is equipped with a Mitsubishi G370 300-dpi thermal transfer print engine that can use monochrome (black), three-color (cyan, magenta, and yellow), or four-color (cyan, magenta, yellow, and black) film. With four colors, you get more than 16 million shades. QMS claims that it delivers an 8½-by-11-inch monochrome image in 15 seconds, three-pass color in less than 60 seconds, and four colors in 85 seconds. That's due to a 16-MHz Motorola 68020-based controller, which comes standard with 4MB RAM and 1MB ROM. The controller features Adobe PostScript version 50.3 and 35 resident Adobe typefaces.

While the Model 10 can print on both plain paper and transparencies, QMS recommends coated paper for the best-looking output. An adjustable letter/legal-size paper cassette holds up to 100 cut sheets of paper or transparency film, and the output tray handles 50 sheets, face up. Other standard features include serial, parallel, and AppleTalk ports as well as an external SCSI interface for a hard disk drive. The printer ships with a collection of utilities that simplify printer start-up and testing.

The Model 10 has enough memory to handle a letter-size page of PostScript text and graphics. An optional 1MB board enables you to image text and graphics on legal- or A4-size paper. Beefing up memory with a 4MB option adds the headroom for soft fonts. However, choose memory options wisely; you scrap the 1MB board when you jump to the 4MB version.

The QMS ColorScript 100 Model 10 lists for $9995, the 1MB memory board for $595, and the 4MB board for $1495. QMS Inc., One Magnum Pass, Mobile, AL 36618; 800/631-2692, 205/633-4300. —*Wes Nihei*

Reader service no. 678

Hicard Micro Channel Memory Board

A Memory Mixer for IBM PS/2s

If you own a 286-based Micro Channel system and yearn to realize IBM's vision of multitasking under OS/2—or simply want to run the new *1-2-3* release 3 or *dBASE IV*—you'll probably want more extended memory. And then there are those memory-hungry DOS applications, memory-resident utilities, and possibly even that network software that send you shopping for more expanded memory. RYBS Electronics lets you keep your options open.

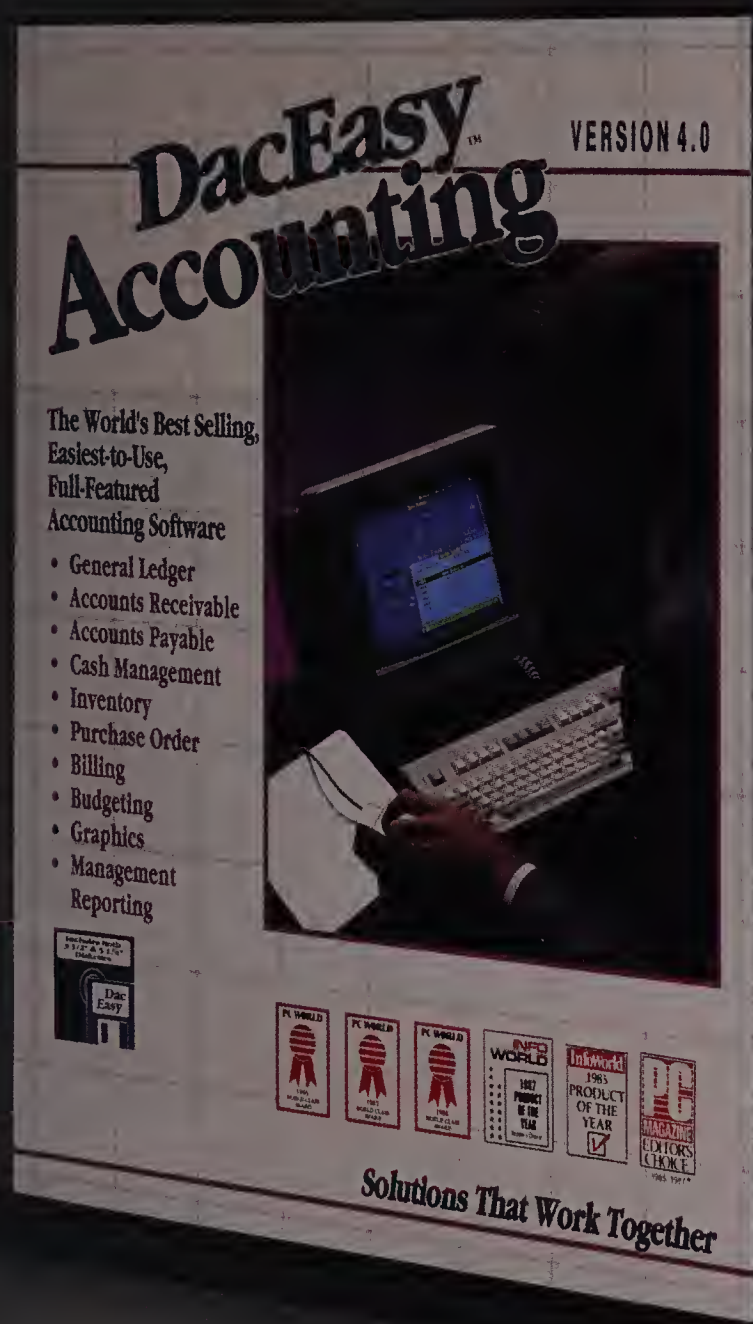
The Hicard Micro Channel Memory Board is a full-length 16-bit board that packs PS/2 Models 50 and 60 and compatibles with up to 8MB of RAM. You can configure the Hicard as true EMS 4.0 expanded memory, extended memory, or both, without flipping a single switch. At the same time, the board can extend DOS's domain beyond 640K by mapping memory into free areas between 640K and the video buffer. Tucking LAN software and other memory-resident utilities in that upper memory leaves more user RAM free so you can run larger programs on your network server or workstation.

Hicard installs without switches or jumpers. Just snap in the right number of "standard" 256K and/or 1MB SIMMs (not available from RYBS), and let the board's installation software determine what memory spaces are available and give you access to them.

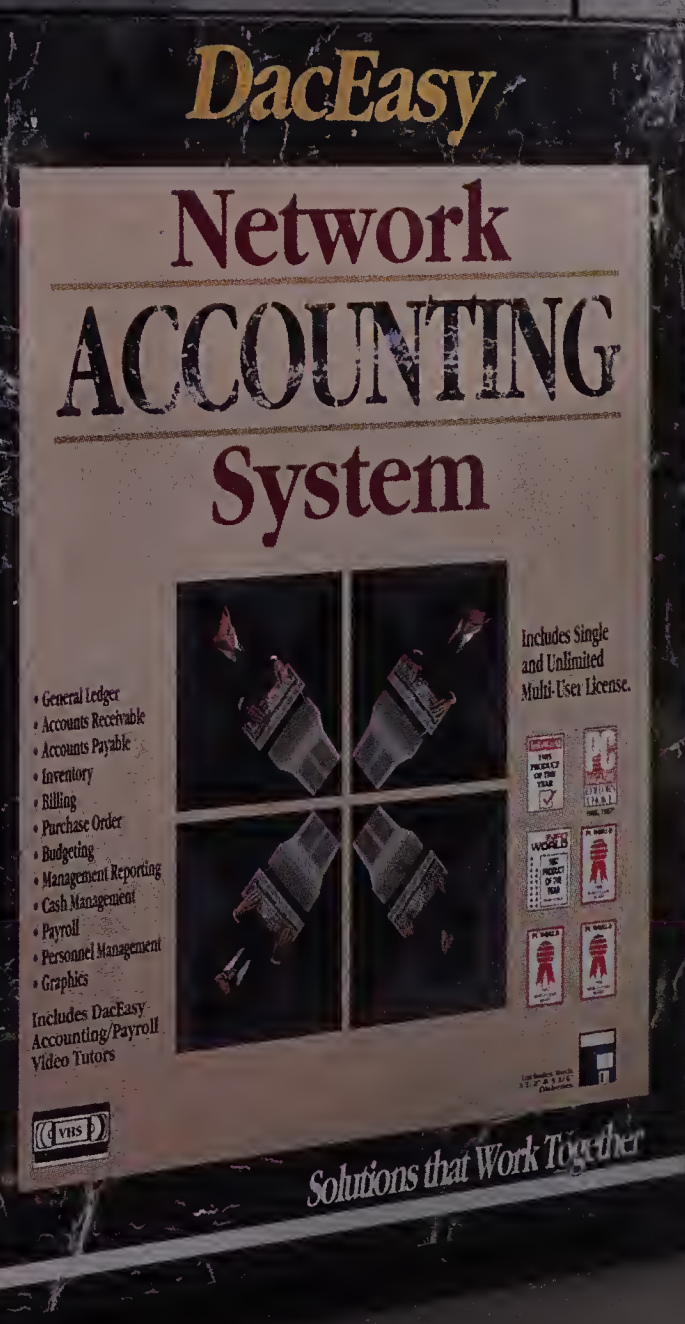
With 512K (two 256K SIMMs preinstalled), the Hicard costs $850; you can upgrade it to 6.5MB. You must replace the 256K SIMMs with 1MB SIMMs to reach the 8MB total. RYBS Electronics, 2590 Central Ave., Boulder, CO 80301; 303/444-6073. —*Wes Nihei*

Reader service no. 680

The Cornerstone of Your Growing Business.



49.95



$499.95

ıtroducing Two Remarkable New Products from the Leader of Accounting Software

1/2 million people in 18 countries have built their businesses with ıelp of DacEasy. Knowing the importance of this investment, e listened to our customers and as a result, we've developed our yet. Version 4.0 of DacEasy Accounting offers so much more than 'counting the beans"; it's a manager's dream. With over 100 new ıres, Version 4.0 also provides instant analysis of company per-ance with the new management reporting and graphics modules. ıove up seamlessly to the DacEasy Accounting Network System, h sets new standards of excellence in full-featured accounting!

Extended Support for Today and Tomorrow

nd every DacEasy product, more support is provided than on any accounting package in history--seminars in 40 cities, self-paced actional materials, tutorial books by five publishers, telephone as-nce from over 35 friendly, qualified DacEasy representatives, tapes and a complete line of award-winning software such as d 3-D that can integrate perfectly!

Special Upgrade Offer the DacEasy Way!

We make it so simple for existing DacEasy Accounting users to upgrade. Whether you're a 1.0, 2.0 or 3.0 user, call in with your Serial Number and receive new Version 4.0 or the Network Version at special pricing.

DacEasy, Inc.

Solutions That Work Together

See Your Local Dealer or to order call

1-800-877-8088

(in Canada, call 416-444-EASY)

or write to: DACEASY, INC. • 17950 Preston Road • Suite 800• Dallas, TX 75252 •(include $7.50 for postage and handling within U.S.) • Ask for your free People's Choice Catalog on the entire line of DacEasy software and hardware • Unconditional 30 Day Money Back Guarantee on all products bought directly form DacEasy (less shipping charges)

ıum Hardware Requirements: DacEasy Accounting Network System supports Novell Network, IBM PC NET and any DOS 3.1 Net Bios Compatible LAN • DacEasy Accounting Version uires 512K memory (640K with graphics), IBM or compatibles. Hard disk only. MS-DOS or PC -DOS 2.1 or later. Monochrome, CGA, VGA and EGA monitor. Mouse optional. • MS-PC-DOS, IBM and Microsoft are trademarks of their respective corporations. DacEasy and Lucid 3-D are trademarks of DacEasy, Inc. Copyright © 1989, DacEasy, Inc. All rights reserved.

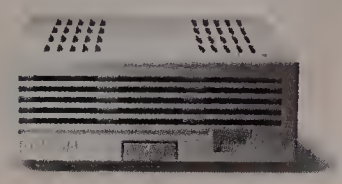
Includes Both 3 1/2" & 5 1/4" Diskettes

LCO

Media Code 208

SEE US AT FALL COMDEX

You can easily add extra memory, a modem, AT® expansion board, plus additional 20MB or 40MB removable hard drives whenever you see fit.



Epson Equity LT/286e. Intel 80C286 processor, 8/12MHz clock speed, IMB of standard RAM, expandable to two megabytes with Epson "snap-slot" board, 17 lbs. with snap-on battery unit, registered trademark of Seiko Epson Corporation. 286 is a trademark of Intel Corporation. Equity is a trademark of Epson America, Inc. 2780 Lomita Blvd., Torrance, CA 90505. **(800) 922-8911.**

NOW YOUR DECISION ON WHICH LAPTOP TO BUY DOESN'T HAVE TO BE FINAL.

Epson's new laptop computer doesn't just go with you, it grows with you. The new Equity™ LT/286e starts with a 3.5" floppy drive, easy-to-read "paper-white" display, 286™ processor and one megabyte of RAM, all standard. You decide between a 20 megabyte or 40 megabyte removable hard drive. Where you take it from there is entirely up to you. Add more memory, a modem, expansion card or change hard drives, whenever your business demands it.

The new Equity LT/286e is part of a growing line of quality laptop computers from Epson.® The final word in value.

EPSON

WHEN YOU'VE GOT AN EPSON, YOU'VE GOT A LOT OF COMPANY.™

13 lbs. without battery, one AT-compatible expansion slot (2/3 size), optional internal 2400 baud modem and 5.25" external FDD, one year limited warranty. ©1989, Epson America, Inc. Epson is a

dBASE STATS

Taking the Right Cut at Your Data

You have data, reams of it, routinely collected on the mainframe or in your PC data base manager. But making sense of it is another matter.

In the past, many users pulled that data into *1-2-3* for analysis. But now Ashton-Tate has teamed up with statistical analysis software maker SPSS to introduce a package that lets you manipulate and analyze information from the company data base more directly.

As the name implies, *dBASE STATS* is an add-on for Ashton-Tate's popular data base, reading *dBASE* files directly and applying the 12 most common statistical functions.

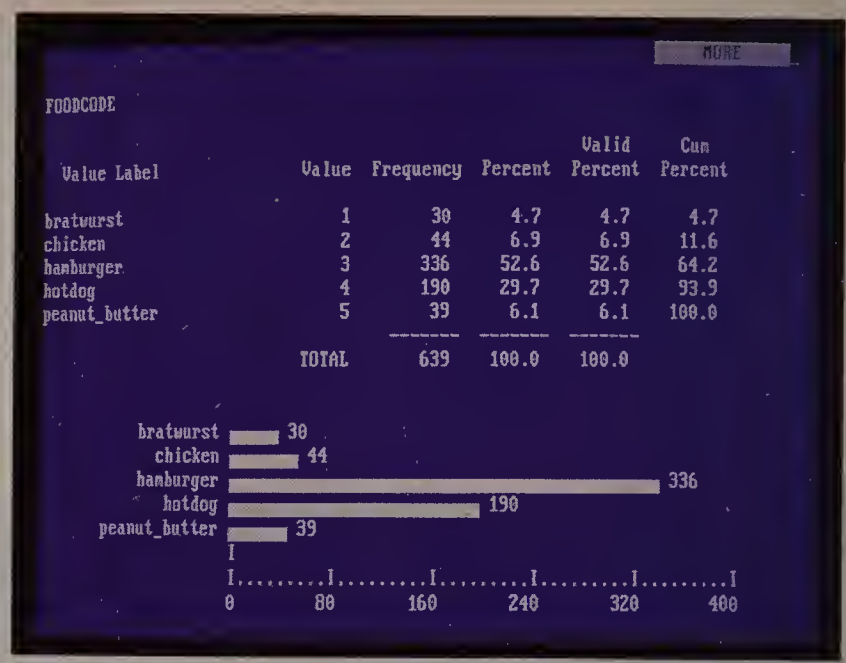
For example, you might use regression analysis to determine environmental factors impacting worker productivity or curve-fitting techniques to extrapolate tomorrow's sales from yesterday's.

dBASE STATS employs a *dBASE IV*–style control center interface with pulldown menus and pop-up dialog boxes to parse your data before you import it. You can call the program from within *dBASE*, which unloads automatically, reloading when you exit *dBASE STATS*.

The real beauty of the program, though, is that it enables you to get regular updates of data for analysis without having to export a file. And *dBASE STATS* reads Lotus .WKS and .WK1 as well as SYLK and .DBF files.

You can export your findings directly to Ashton-Tate's graphics programs, *Chart-Master* and *Draw Applause*. *dBASE STATS*, which retails for $400, requires DOS 2.1 or a later version, 512K of memory, and a hard drive. A math coprocessor is recommended. Ashton-Tate, 20101 Hamilton Ave., Torrance CA 90502-1319; 213/329-8000.
—*Mike Hogan*

Reader service no. 682



No need to type reams of data into a spreadsheet for analysis: dBASE STATS reads .DBF files directly and lets you apply the 12 most widely used statistical analysis functions to as many cuts of the data as you wish.

Amdek System/286N

LAN Problem Solver Plugs Leaks, Cuts Costs

The Amdek System/286N enhances LAN data security and reduces maintenance because it's diskless and has no moving parts.

Local area networks are one solution to multiuser needs, but they present their own worries—namely, data security and the cost of buying and maintaining new workstations.

Amdek offers its System/286N diskless workstation as a cost-effective solution to both problems. Taking the disks out of LAN nodes plugs at least one potential data leak. And not only is a diskless workstation less expensive than a stand-alone system, the absence of moving parts such as fan, floppy disk, and hard disk increases long-term reliability and reduces maintenance costs.

The 286N has a built-in tilt-and-swivel monitor and a footprint a mere 13 inches square. It houses a 12.5-MHz 80286 CPU running at one wait state, 1MB of 100ns memory, and two 8/16-bit slots—one for a network card and one for the Amdek 132 VGA card that comes standard with the system. The Spartan feature list includes a socket for an 80287 math coprocessor, two serial ports, one parallel port, a 101-key keyboard, and a glare-fighting, 14-inch, flat-screen monochrome monitor.

The Amdek System/286N retails for $1999. Amdek Corp., 3471 N. First St., San Jose, CA 95134; 800/722-6335.
—*Wes Nihei*

Reader service no. 681

To grow even faster, pick up the phone.

1-800-288-6574

Some people, and companies, are on too fast of a track to wait for a card to get to us. For them, there's 1-800-288-6574. Call us and we'll mail the book to you right away. Or, if there's a CompuAdd Superstore nearby, call and a corporate sales representative will get one to you. If you understand that the best way to the top is improving your bottom line, you should call our line right now.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 6386 AUSTIN, TX

CompuAdd
12303 Technology Blvd.
Austin, TX 78727-9988

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 6386 AUSTIN, TX

CompuAdd
12303 Technology Blvd.
Austin, TX 78727-9988

Yes, we need a new breed of computer company that is truly customer driven. Send information on CompuAdd ASAP!

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
MAIN SWITCHBOARD NUMBER _____
DIRECT NUMBER _____

A. Which products interest you most?
- ☐ 8088/8086 class systems
- ☐ 286 systems
- ☐ 386 systems
- ☐ Peripherals
- ☐ Other

B. Are you an:
- ☐ End user
- ☐ Consultant
- ☐ Reseller
- ☐ Corporate purchaser
- ☐ DP/MIS
- ☐ Owner

C. How many business PCs do you now have installed?
- ☐ 1-10
- ☐ 11-25
- ☐ Over 25

D. How many PCs does your company plan to purchase in the next 12 months?
- ☐ 1-10
- ☐ 11-25
- ☐ Over 25

E. What is your primary computing interest?
- ☐ Corporate/Institutional
- ☐ Small business
- ☐ Student/Educational
- ☐ Home

3043

Last chance to send for the book on CompuAdd. If someone has already taken the first card, fill this one out and mail it quickly. Before it's gone, too.

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
MAIN SWITCHBOARD NUMBER _____
DIRECT NUMBER _____

A. Which products interest you most?
- ☐ 8088/8086 class systems
- ☐ 286 systems
- ☐ 386 systems
- ☐ Peripherals
- ☐ Other

B. Are you an:
- ☐ End user
- ☐ Consultant
- ☐ Reseller
- ☐ Corporate purchaser
- ☐ DP/MIS
- ☐ Owner

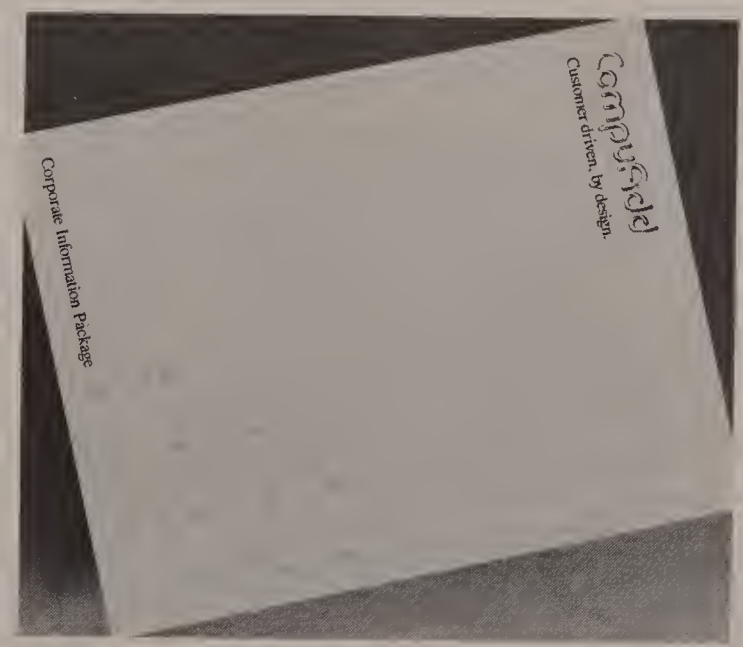
C. How many business PCs do you now have installed?
- ☐ 1-10
- ☐ 11-25
- ☐ Over 25

D. How many PCs does your company plan to purchase in the next 12 months?
- ☐ 1-10
- ☐ 11-25
- ☐ Over 25

E. What is your primary computing interest?
- ☐ Corporate/Institutional
- ☐ Small business
- ☐ Student/Educational
- ☐ Home

3044

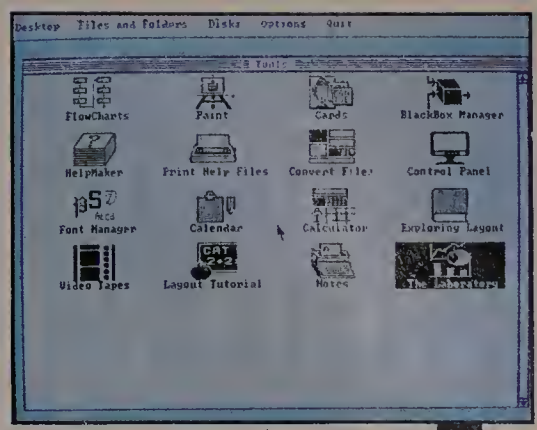
This book can help Fortune 1000 companies become Fortune 500 companies.



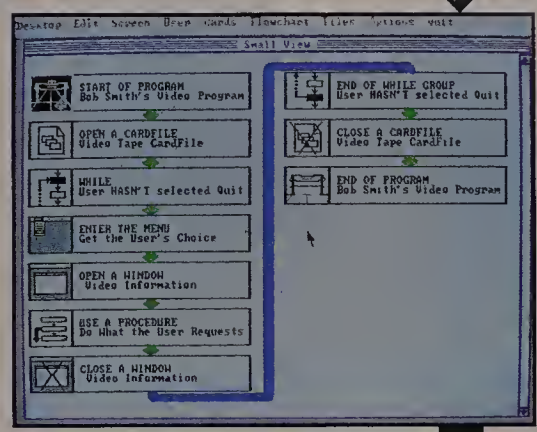
It's the book on CompuAdd for decision makers and buyers of personal computers, peripherals, software and related equipment. It tells you what CompuAdd is about and, more important, all the different ways we can save you money and time. Which is one way big companies get to be even bigger companies.

Fill out a card, send it in, and you'll get the book on CompuAdd.

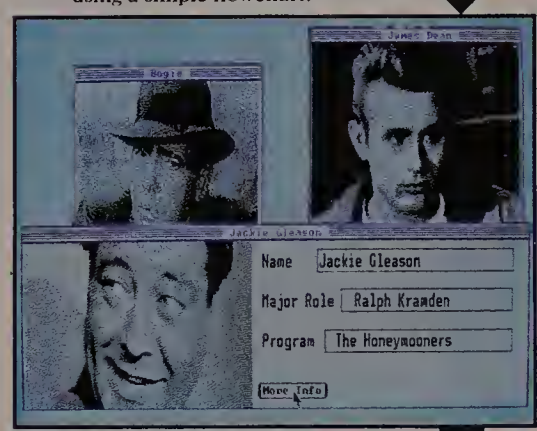
Don't Let the Desktop Programming Revolution Start Without You.



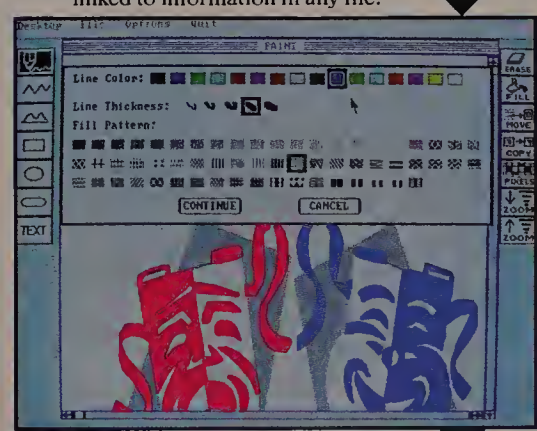
With Layout 2.0, getting started is as easy as choosing a tool.



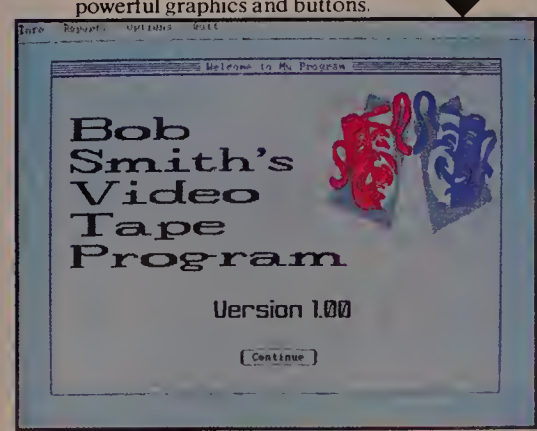
Design and build your programs by using a simple flowchart.



Create Hypercard®-like cards, linked to information in any file.



Use the Paint tool to create powerful graphics and buttons.



Layout creates finished, stand-alone programs for any IBM PC.

Presenting Matrix Layout 2.0

The Desktop Programming revolution has begun. More and more people are maximizing the productivity of their desktop computers without learning to write a line of code. It began with Matrix Layout. And continues with Layout 2.0.

More Power to the People

Matrix invented Desktop Programming to let you create your own programs right on your own PC. Now, Layout 2.0 makes it even easier to create your own powerful, professional-quality applications.

Start with Layout's tools window. Everything you'll need to build your program can be accessed by mouse or keystroke.

Next, use Layout's graphics and text tools to build a flowchart model of your program. Create your own windows, icons, and buttons. Cut and paste functions from other Layout programs. Or use the BlackBox Manager to add a BlackBox—a pre-built capability such as telecommunications or dBase support—to your Layout program. All, without writing a line of code.

Layout 2.0 is also a hypertext tool, allowing you to build Hypercard®-like cards, with text and graphics, and link them to related cards in any file. Use it to create cards for your flowcharts or to create hypertext applications that will run on any IBM-compatible PC.

Power to the Professional

Once your program is complete, Layout 2.0 can automatically create a ready-to-run .EXE file for use by any IBM PC. Or have Layout 2.0 write it in Turbo C, Lattice C, Microsoft C, Turbo Pascal or QuickBASIC. The result: you've got a professional, stand-alone program that does exactly what you want it to. Use it, share it, modify it. You've got the power.

And a Powerful Bargain

For just $199.95 you get the entire Layout 2.0 package, including free technical support, and more programming power than you've ever had on your desktop. For more information, the location of your nearest Matrix dealer, or a copy of the Matrix Layout 2.0 VHS demonstration video (just $9.95 for shipping & handling), call today.

1-800-533-5644
(in Massachusetts, 617-567-0037)

Join the Desktop Programming revolution. Order Matrix Layout 2.0, today!

Matrix Software Technology Corporation • One Massachusetts Technology Center • Harborside Drive • Boston, MA 02128 • (617) 567-0037

Matrix Software UK • Matrix House, Derriford Business Park • Derriford, Plymouth • Devon PL6 5QZ, England • 0752-796-363.
Matrix Software Europe • Geldenaaksebaan 476 • 3030 Leuven, Belgium • 016202064

The following are registered and unregistered trademarks of the companies listed: Matrix Layout, Matrix Software Technology Corporation; Hypercard, Apple Computer; IBM, International Business Machines Corporation, dBase, Ashton Tate.

PCW 89/11

Circle 147 on reader service card

Introducing the first laser printer to let you do all this right out of the box.

Imagine being able to produce the kind of graphics and type fonts pictured here on your PC.

You probably can't.

Because even with today's advanced word processing programs, no other comparably priced laser printer can print sophisticated graphics or page layouts without additional options or add-ons that can end up costing you thousands of dollars more.

Which is why we designed our LBP-8 Mark III Series Printers to perform right out of the box.

With features like scalable fonts that let you create type in any size or rotation. Standard.

Enough memory to print a full page of text and graphics. Standard.

Plus an enhanced vector graphics command set that creates smooth lines and curves, eliminating the jagged edges you get with some laser printouts. Also standard.

And the Mark III is built around the reliable Canon SX engine and replaceable EP-S cartridge for quiet, dependable operation.

For professional-looking documents, reports, presentations, or whatever you need to print, no other printer does so much to improve your image.

For more information, call toll-free 1-800-453-3307.

® LBP and Canon are registered trademarks of Canon Inc.

Canon

LASER BEAM PRINTERS

With Canon's LBP–8 Mark III Series Laser Beam Printers, you get all the enhanced graphics capabilities you need to work with advanced software programs like Word Perfect 5.0, Wordstar 5.5, Microsoft Word 5.0, Microsoft Windows, Lotus 1–2–3 and Digital Research GEM.

It's also the only laser printer to feature a National Semiconductor 32–bit microprocessor. So you can print even sophisticated graphics faster than ever before.

For versatility, three models are available offering additional features like automatic double–sided printing and dual paper cassettes that together can hold up to 400 sheets. And memory that can be expanded from the standard 1.5MB all the way to 4.5MB of RAM.

SCALABLE FONTS

With the Canon Printer System Language Controller (CaPSL), you can choose from nine scalable fonts that can be printed in almost any size you need, plus eight bit–mapped fonts, all standard.

AAAAAAAAAAAAAAAAAAAA

VECTOR GRAPHICS

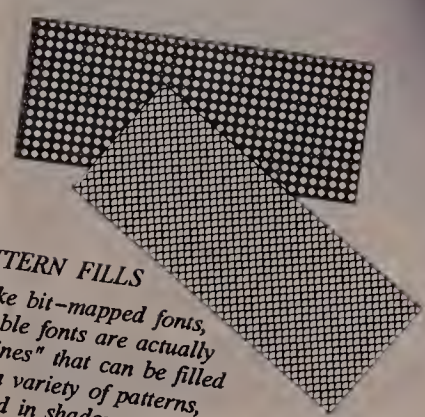
An enhanced vector graphic command set eliminates the jagged edges on large type and graphics you find with ordinary laser printouts.

128 FONTS
128 FONTS
128 FONTS
128 FONTS
128 FONTS

*128 FONTS **

A wide range of additional fonts is available on easy–to–install IC cards, including: Avant Garde, Bookman, Zapf Chancery, Century Schoolbook and more. 128 fonts in all.

* 128 per page



PATTERN FILLS

Unlike bit–mapped fonts, scalable fonts are actually "outlines" that can be filled with a variety of patterns, printed in shadow and various other graphic effects.

Canon LBP-8 mark III Series
LASER BEAM PRINTER

Working to improve your image.™

Circle 55 on reader service card

Cornerstone XL

Seeing the Whole Elephant

Remember the parable about the seven blind men who try to picture an elephant by touching a leg or the trunk? Visualizing a complex page layout when you're using a standard monitor poses similar difficulties. But the Cornerstone XL subsystem gives you the big picture with a 15-inch full-page, high-resolution display.

Bundled with controller and software drivers, the portrait-style display is noninterlaced, so it doesn't suffer the flicker associated with interlaced displays like IBM's 8514. The key to performance is a full-page controller with 74-MHz throughput. The speed advantage shows up in the Cornerstone XL's flicker-reducing 70-Hz refresh rate. The monitor supports up to four levels of gray at 768 by 1080 resolution.

Designed for desktop publishing and engineering, the monitor is bundled with drivers for *WordPerfect*, *WordStar*, *PageMaker*, and *Ventura Publisher* as well as for several popular spreadsheet and CAD programs. You also get four proprietary *TrueFonts*, including Times Roman, Helvetica, Symbol, and Courier. Cornerstone employs gray-scale anti-aliasing techniques to eliminate ragged edges on the letters.

The portrait-style Cornerstone XL monitor, bundled with controller and software drivers, is a big new window on your desktop publishing and engineering projects.

The Cornerstone XL, which requires DOS 3.0 or a later version, supports *Windows/386 2.1*, *Windows/286*, and *GEM*. A monochrome version costs $1295. The four-shade gray-scale model runs $1495. Cornerstone Technology Inc., 1883 Ringwood Ave., San Jose, CA 95131; 408/453-9800. —*Mark Henricks*

Reader service no. 683

PageLaser6

Low-Cost Workhorse Fits Into the LaserJet's Traces

The PageLaser6, a work-group printer that uses HP LaserJet Series II fonts, is 35 percent smaller and, at 6 ppm, only a little slower than the LaserJet.

The wildly popular Hewlett-Packard LaserJet Series II has spawned many imitators. Toshiba America makes no bones about it—its PageLaser6 is a LaserJet compatible meant to work side by side in your office with the popular HP workhorse. The 35-percent smaller and lighter Toshiba offers you interchangeable fonts and slightly less speed at a slightly lower price.

The PageLaser6 is built around TEC's own 6-ppm engine (compared to the 8-ppm throughput of the Series II's Canon engine). It provides up to 300-dpi resolution and has a useful life of 300,000 pages, given a 4000-page-per-month duty cycle.

Like the Series II, the PageLaser6 targets general office applications. Weighing only 35 pounds, the printer measures just over 16 by 15 by 8 inches. It ships with 512K of memory and accepts a single 1MB, 2MB, or 4MB expansion board. The input and the output trays have a capacity of 150 sheets each (instead of HP's 200), adjustable from envelopes through legal-size paper.

Resident typefaces include Courier, Courier Bold, Prestige Elite, and Line Printer in both portrait and landscape orientations. The PageLaser6 can use HP font cartridges and soft fonts. The printer has both serial and parallel interfaces and two HP-compatible cartridge slots. It retails for $2000. Toshiba America Information Systems, Computer Systems Division, 9740 Irvine Blvd., Irvine, CA 92718; 714/583-3000. —*Mike Hogan*

Reader service no. 684

Of course, these are just a few opinions, but we'd say there's a definite trend here.

We'd like to thank the thousands of PC World Magazine readers who voted TurboTax the best Tax Planning and Preparation program for four years in a row.

TurboTax may be so popular because we designed it to be incredibly fast and powerful, yet extremely easy to use.

Or perhaps it's the enhancements we add each year. Exciting new features this year include pull-down menus, an expanded Auto Interview Worksheet, a printable reminder system, full mouse support, enhanced graphics, even a Tax Trivia game.

TurboTax includes more than 60 IRS forms and worksheets — each displayed on your screen, so filling out even complex returns is

TurboTax

extremely easy.

If you need advice, on-line, item-sensitive IRS help screens and our own cross-referenced Help System indicate what type of information to enter for each item. We can even refer you to a professional tax preparer who can finish your taxes using your TurboTax data.

Quick-Look Tax Window •1990 Tax Planning included free • Pop-up Calculator • Data Examiner to help pinpoint omissions in your return • Dot matrix 1040 • 1040 A short form • Free copy of the *Price Waterhouse Personal Tax Advisor* • Fully integrated programs for 41 state returns also available.

When you're through calculating your taxes — in under 10 seconds — you can print everything, including the IRS-approved dot matrix 1040, on plain paper with most dot matrix printers.

No wonder over 2,000,000 returns were prepared last year with America's number-one tax preparation software. TurboTax.

See your local dealer or purchase direct by calling 1-800-782-1120, or 619-453-8722 in California.

Suggested Retail prices — Federal: $75.00, Updates: $37.50, Each State: $40.00, Updates: $25.00. California residents include sales tax. TurboTax requires 384K.

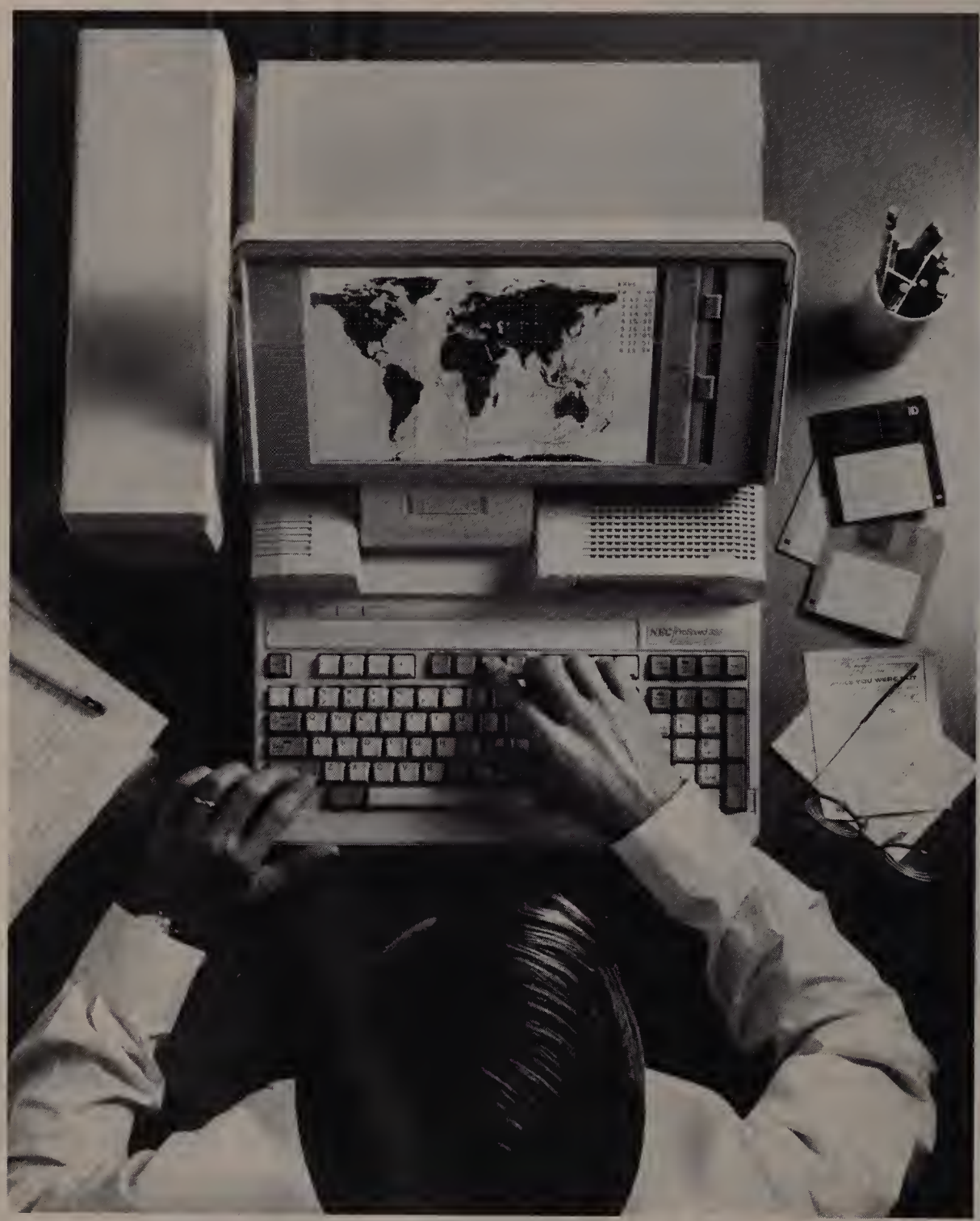
ChipSoft, Inc.

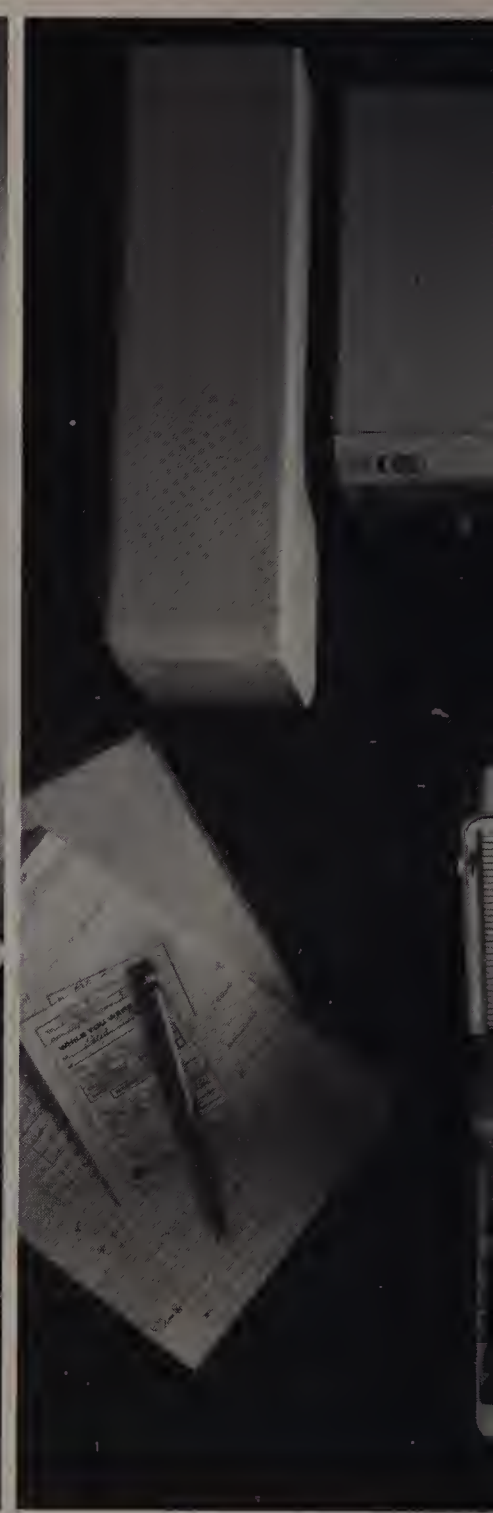
5045 Shoreham Place
San Diego, CA 92122

Circle 262 on reader service card

The ProSpeed™ 386 desktop PC.

To understand its massive power,





In the past, people who were serious about their computers have had a serious dilemma.

They could either buy a powerful desktop and give up any thoughts of portability. Or get a laptop, and forget about expansion and connectivity capabilities.

But never could they find a computer flexible enough to give them both.

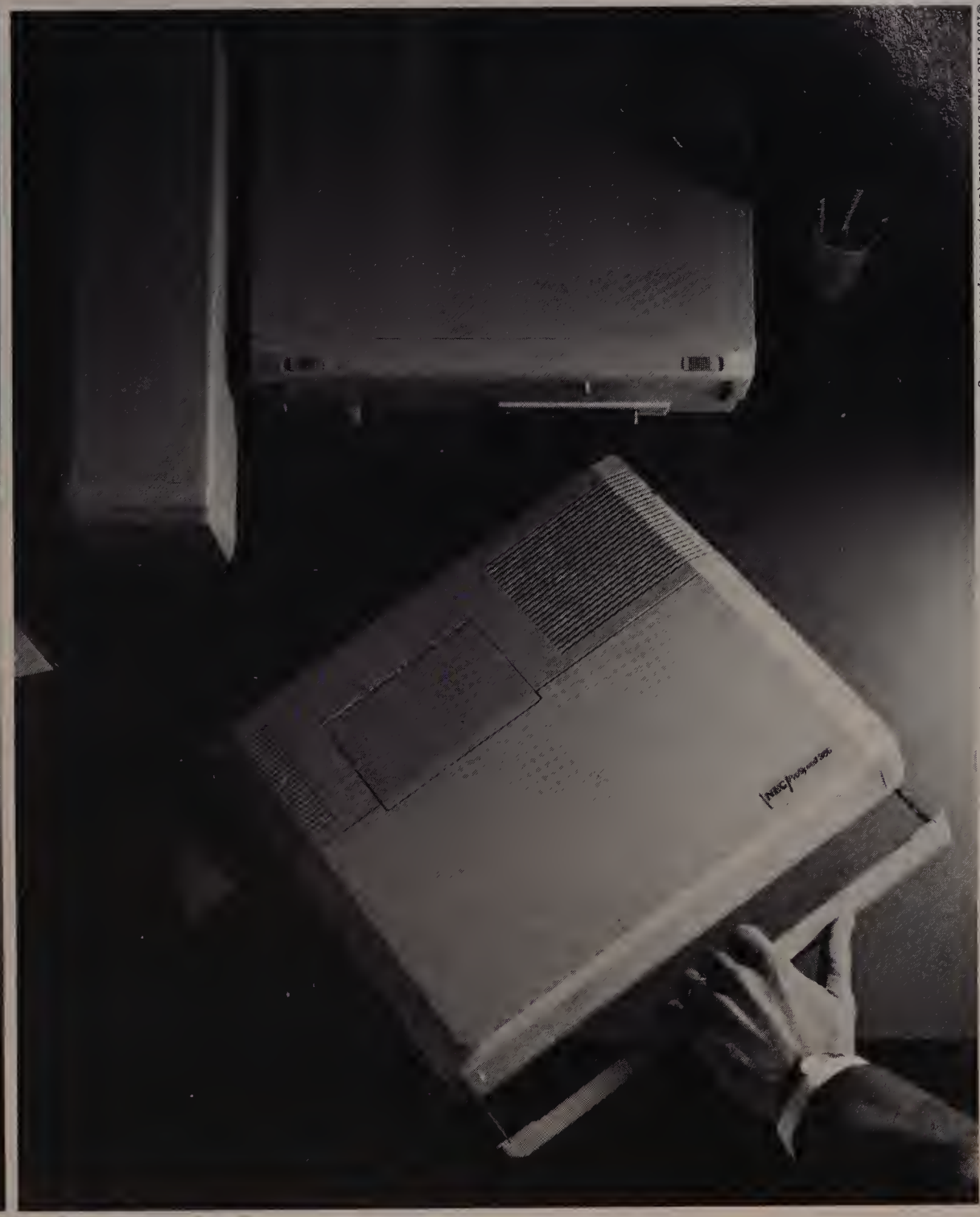
Until now. With the ProSpeed 386 from NEC.

As you'd expect from a powerful 386 desktop, it runs at a swift 16MHz, has seven expansion slots and up to four drives. So it can handle anything you throw its way.

And when you want to take it on the road, it's still a high-powered computer. The laptop unit is available with either a 40 or 100MB hard disk. It's also battery operated and has up to 10 megabytes of memory. There's even a paper-white Monograph screen with VGA text/EGA graphics resolution that pro-

C&C Computers and Communications

you have to take it apart.



vides the readability and graphics capabilities of a full-sized CRT.

All this and total connectivity capability, too. When you want to turn it back into a desktop, you merely slide the computer into a unique Docking Station™ that never leaves your desk. It contains two standard drive bays as well as the capacity for four full-sized cards. So in a matter of seconds, you're fully integrated back into your office.

No manual reconfiguring. No phone lines to connect. No cable hookups.

What's more, for a computer with this kind of flexibility, the price isn't a hassle either.

So if you'd like us to continue taking the ProSpeed 386 apart, call NEC Home Electronics (USA) Inc. at 1-800-FONE-NEC.

Or, if you'd like to dissect it yourself, call for product literature at 1-800-826-2255.

In Canada, call 1-800-268-3997.

NEC

©1989 NEC Home Electronics (USA) Inc. ProSpeed and Docking Station are trademarks of NEC Home Electronics, Ltd.

Circle 182 on reader service card

UPDATE

Quicken 3

Keeping Expenses in Check

When Intuit first set out to create a check-register package, its goal was pretty basic: to make a program that was faster to use than doing the math by hand. The result was a convenient tool to balance checkbooks, print checks, and do limited financial reporting.

Version 3 of *Quicken* cements its links to the small-business community by adding muscle to asset handling and reporting while retaining its intuitive interface. *Quicken 3* now tracks multiple cash and credit card accounts; makes transfers between multiple accounts and produces reports from them; and includes report templates for tax summaries, account balances, profit and loss, and asset and liability management. Like *Andrew Tobias' Managing Your Money 6.0*, *Quicken 3* has a tie-in with CheckFree, an electronic payment service in Columbus, Ohio (see *Product Outlook*, *PCW*, October 1989).

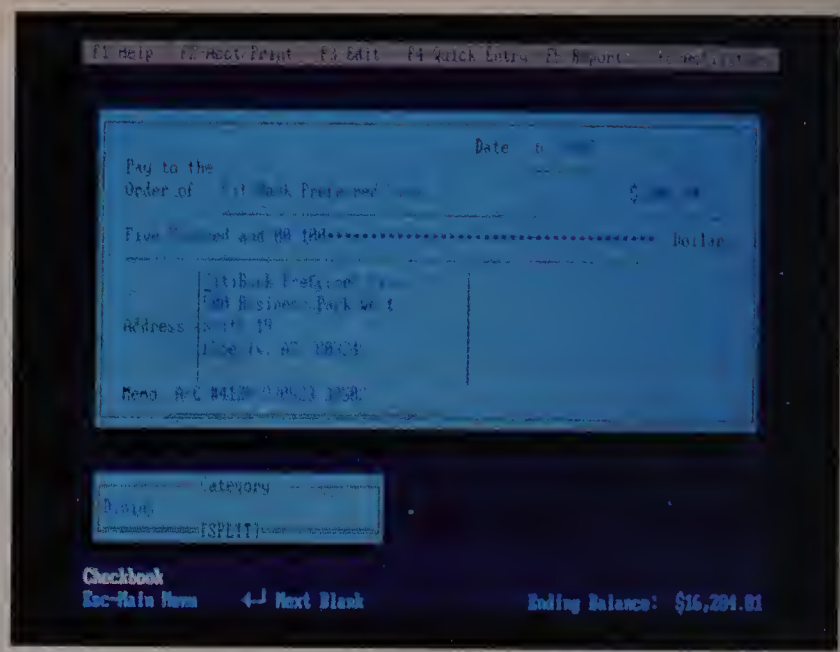
Aimed at spenders as well as scrooges, the $59.95 program now tracks income and expense categories for amounts up to $10 million. Its instant reports consolidate information from multiple savings, checking, and credit card accounts and provide loan amortization and capital equipment depreciation data. As with version 2, you can break the figures down by account or general category, making year-end tax calculations a lot faster. But *Quicken 3*'s new spreadsheetlike display makes it easier to compare the profitability of various properties, projects, or jobs.

Other additions include ASCII and *1-2-3* export capabilities, a pop-up calculator, two levels of password protection, and more check styles (including laser voucher and wallet-size checks). *Quicken* won't help you get rich, but it will quickly tell you where the money is—or was.

Quicken 3 sells for $59.95. Upgrades are $29.95, or $8 if you bought version 2.0 after May 7, 1989. Intuit, Inc., 540 University Ave. #50, Palo Alto, CA 94301; 800/624-8742, 415/322-0573.

—*William Rodarmor*

Reader service no. 687



Intuit's new version of Quicken keeps the intuitive interface, but it now can track and write checks for multiple cash, credit card, and checking accounts.

Microsoft Mouse 400 Series

Less Squeak, Fleeter Feet

At 400 ppi, Microsoft's new mouse has twice the resolution and faster on-screen movement than previous versions.

Microsoft has bred a new mouse that doubles resolution to 400 pixels per inch for faster on-screen cursor movement with less motion required of your arm.

Microsoft Mouse 400 Series offers the same ergonomics as its predecessor, but higher on-screen resolution combined with an accelerator algorithm lets you set the ballistics of the mouse's movement so that you can use less desk space, less elbow grease, and more wrist to move the cursor across the screen as quickly as you wish.

Microsoft Mouse 400 Series comes in two varieties: One is for serial and PS/2-compatible mouse ports; the other plugs into an included expansion card for the PC bus. Both also include an OS/2 driver and either an update of *Microsoft Paintbrush* with a character-based graphic user interface ($150) or *Windows/286*, which includes *Paintbrush for Windows* ($200). A Business Five-Pack (five mice and drivers, but no bundled applications) is available for $600. Microsoft Corp., 16011 N.E. 36th Way, Redmond, WA 98073-9717; 206/882-8080.

—*Mike Hogan*

Reader service no. 688

Somewhere Over The VGA Clutter Lies a Clear Choice

Finding the right VGA card can be a long and confusing journey, so follow the name you can trust. Hercules, the company that defined PC graphics, brings you the Hercules VGA Card. At just $299,* it's everything you need to enter the kingdom of color.

Compatible. The Hercules VGA Card delivers all 17 IBM standard video modes so your EGA and CGA software will be at home. And it will work with any color or monochrome analog video VGA monitor.

Simple. The Hercules VGA Card is easy to install and use with no switches, jumpers or custom software drivers. And since the Hercules VGA Card is faithful to the VGA standard, you'll use future software without needing extra drivers.

Beautiful. Over 256,000 colors will brighten your workday routine. And the Hercules VGA Card's 1/1 aspect ratio makes a square look like a square and a circle look like a circle.

Adaptable. VGA has set the course for operating systems of the future. Windows, OS/2 Presentation Manager and DESQview depend on the Hercules VGA Card's readable registers for multi-tasking ease.

To find out where to catch the Hercules road to VGA satisfaction, call 800 532-0600, ext. 163 (US) or 800 323-0601, ext. 164 (Canada).

There's no place like

Hercules

* Suggested retail price

©1989 Hercules Computer Technology, Inc., 921 Parker Street, Berkeley, California 94710, 415 540-6000. Hercules is a registered trademark of Hercules Computer Technology, Inc. All other product names are trademarks of their respective holders.

Circle 83 on reader service card

FILLING PERFORM
START FILLING YOUR

By enabling you to design, warehouse and fill custom forms on your IBM PC or compatible, Delrina Technology's PerFORM has translated the benefits of "just in time" production to make most paper forms obsolete.

PerFORM starts with the logic of the best desktop publishing software. Gives you the same near-typeset resolution. Merges it with the best of data entry software. And goes far beyond both to save money and time.

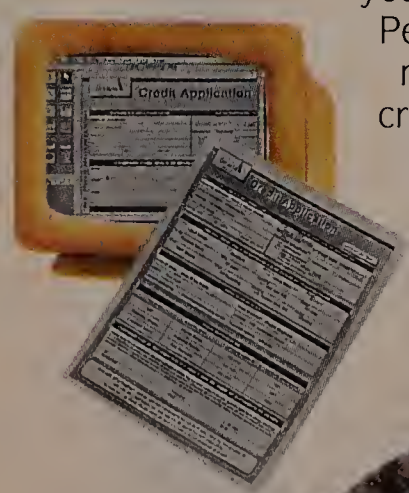
DESIGNERS DESIGN, FILLERS FILL

By splitting the functions into separate Designer & Filler software, PerFORM lets you maintain control of Design while you distribute Filler to every workstation that needs it. Even better with our specialized LAN Filler software.

WYSIWYG PLUS

PerFORM Designer & Filler are graphic-based. You see on-screen exactly what your form will be when you print it.

PerFORM has mouse-driven creation tools that no other forms processing software has. And



FORMS WILL HEAD WITH IDEAS.

forms-dedicated features that desktop publishing software doesn't have.

Here's a neat one: you can draw multiple boxes of any size or proportion with PerFORM's comb tool. If you resize, reshape or reposition the boxes, PerFORM adjusts every other component of your form automatically. Desktop publishing software requires you to reshape, resize and reposition every component: component by component.

WYSIWYG FILLER

What you learn once – how to use PerFORM – will apply to all the forms you already know. The forms on your screen can be identical to the paper forms you're familiar with. Virtually everything that is rote can be set up to fill automatically. Client name and address. Discount rates. Serial numbers. And more.

PerFORM eliminates drudgery. Saves incredible time. And even eliminates errors with automatic data entry validation that will block incorrect entries.

PC WORLD BEST BUY

PC MAGAZINE EDITOR'S CHOICE

And it imports from dBase and ASCII files and exports updates transparently.

GIVE THE EXPERTS YOUR EAR

Publish! rated it ★★★★½ and wrote, "Surpasses both the MAC programs and the other PC programs." Stewart Alsop, PC Letter, said, "out-performs them all."

IBM GAVE PerFORM ITS VOTE

PerFORM is the form design software in IBM FAWN – Forms Available When Needed. It enables MS DOS PS/2, PC/XT or PC/AT users to obtain and print the most current "just in time" forms from their IBM S/370 mainframe. And an OS/2 version is more than just the glimmer of an idea.

PHONE 1-800-268-6082

PerFORM is so easy and capable, it's practically guaranteed to get you thinking beyond the obvious savings to new ways to use forms. Such as bar coding your inventory by having PerFORM translate part numbers into a bar code as you list your stock.

PerFORM will change the forms in your business. And maybe, the form of your business. Phone Delrina Technology for more information and your nearest PerFORM dealer:
PerFORM Designer & Filler, $294.95*
PerFORM Filler, $129.95*

PerFORM

PerFORM and PerFORM Designer & Filler are registered trade marks of Delrina Technology Inc. (c) 1989. IBM, IBM FAWN, PS/2, PC/XT, PC/AT and S/370 are registered trade marks of International Business Machines Corporation.

DELRINA TECHNOLOGY INC

*Manufacturer's suggested list price

Circle 328 on reader service card

Corel Draw 1.1

Reach Out and Type to Someone

Good news for desktop publishers—the latest version of Windows-based Corel Draw lets you import typeface outlines to supplement the 102 that ship with the product.

The latest version of Corel Systems' *Windows*-based illustration program makes life easier for desktop publishers. In addition to the typefaces bundled with it, *Corel Draw 1.1* includes a conversion program that lets you import from several manufacturers' typeface outlines—including all Adobe's font outlines (rather than bit map approximations). Corel has thrown in 45 new typeface outlines from 14 type families for a package total of 102.

Once in the draw program, you can reshape the font, adding special effects such as graduated fills or even curving the text. Then you can send your creation to any *Windows*-compatible device, including PostScript printers and the HP LaserJet Series II. Also in the package are 300 images from the libraries of 12 major clip-art vendors; up to 20,000 other images are available from those suppliers.

Finally, *Corel Draw* supports *Windows'* dynamic data exchange, which means you can move live data between the program and other *Windows* applications. *Corel Draw 1.1* sells for $595; upgrades are available for $99. Corel Systems Corp., 1600 Carling Ave., Ottawa, Ontario K1Z 8R7, Canada; 613/728-8200. —*Mike Hogan*

Reader service no. 689

Objectworks for Smalltalk-80

Portable Objects of Desire

Version 2.5 of ParcPlace Systems' Smalltalk-80, an object-oriented development environment, offers greater portability across major hardware platforms.

Now called Objectworks for Smalltalk-80, the latest version gives applications complete binary compatibility, without recompilation, across DOS, Macintosh, and UNIX platforms. You can design your own uniform interface, making it resemble the Mac's or another graphic standard.

Previous versions of the Smalltalk-80 language required you to port source code, then redesign the I/O and debug. Version 2.5 includes a run-time kit that lets you make executable applications and distribute them under a licensing agreement to users who need not have a copy of the full product.

Objectworks for Smalltalk-80, which retails for $595, includes the Smalltalk-80 language, the development environment, a reusable library of more than 300 object classes with more than 5600 methods for modifying objects, and 1200 pages of documentation, including an object-oriented programming tutorial. It requires a 386 machine, EGA or better graphics, 3MB of memory, and at least 5MB of storage. A run-time license starts at $149 for one. ParcPlace Systems, 1550 Plymouth St., Mountain View, CA 94043; 415/691-6700. —*Mike Hogan*

Reader service no. 690

Lattice C 6.0

A Tighter Weave

In *Lattice C* version 6.0, the compiler has been completely reworked. Its new global optimizer reduces the size of the .EXE files it generates, enabling those applications to execute 10 to 30 percent faster.

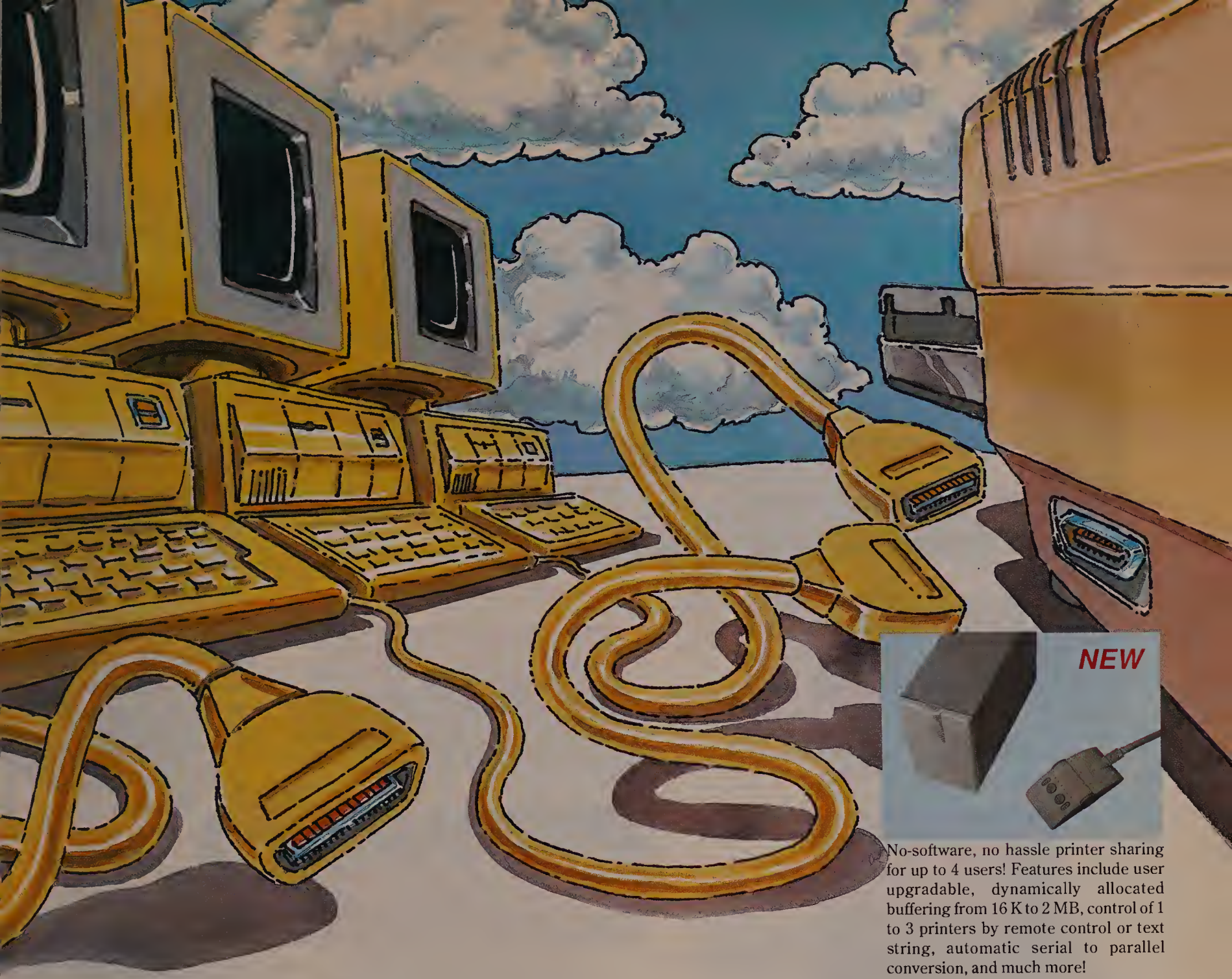
Lattice C 6.0 requires no run-time royalties and lets you speed application development with more than 750 routines in such categories as communications, graphics, and *dBASE*-compatible data base libraries.

The 100-percent ANSI-compatible compiler now includes an enhanced overlay linker to help keep the size of your applications manageable. Its CodeProbe debugger can debug multithreaded OS/2 as well as DOS applications. Utilities previously sold separately—among them a text management/search utility—are now bundled in.

Lattice C version 6.0 requires either DOS 2.1 or a later version, 512K of memory, and a hard drive, or OS/2 1.0 or a later version and appropriate hardware. It sells for $250, down $200 from version 3.4. Lattice Inc., 2500 S. Highland Ave., Lombard, IL 60148; 800/444-4309, 312/916-1600. —*Mike Hogan*

Reader service no. 691

For more information about any product, contact the manufacturer or circle the number on the reader service card. ●



No-software, no hassle printer sharing for up to 4 users! Features include user upgradable, dynamically allocated buffering from 16 K to 2 MB, control of 1 to 3 printers by remote control or text string, automatic serial to parallel conversion, and much more!

Looking For a Better Connection?

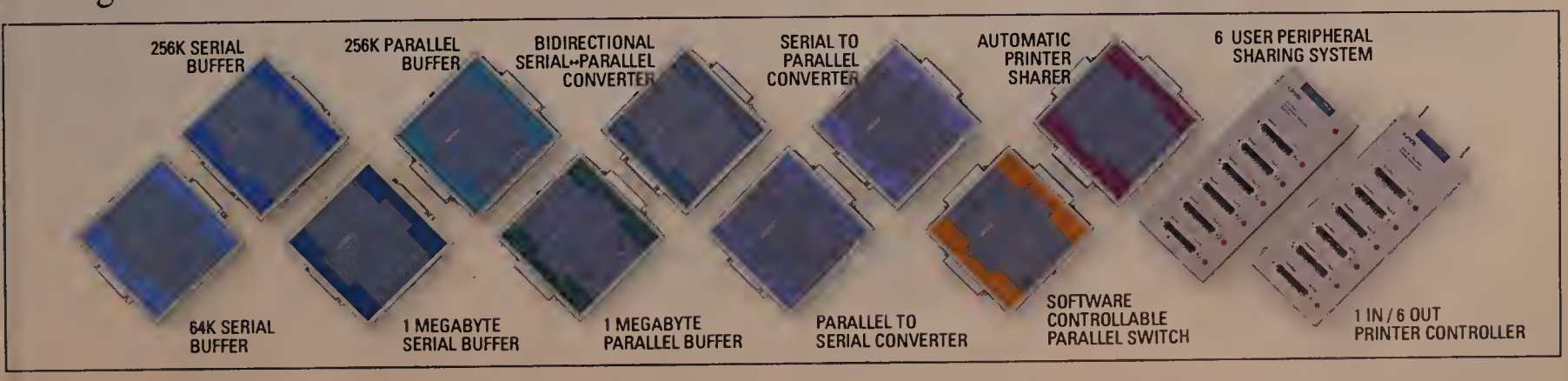
What good is it having more than one computer if you can only print from one at a time? Maybe you have different types of printers, and you'd like to use them all without having to constantly disconnect and switch cables.

Don't you think that all your equipment should work interchangeably or simultaneously as needed, without any downtime at any one station? Isn't that the reason you purchased all that high-tech hardware?

Kansai has a better connection for a better solution to your problems. Quality buffers, sharing systems and interface converters; economical but vital peripherals that can save you more time and money than you probably realize.

Why not really complete your system? Get the Kansai connection.

kansai
International, Inc.
Get the Connection.
A Subsidiary of KANSAI ELECTRIC CO., LTD.



Kansai International, Inc.: 3555 Voyager Street, Suite 201, Torrance, California 90503 / Phone: (213) 542-7626 • 1(800) 733-3374 • Fax: (213) 542-8702

Circle 149 on reader service card

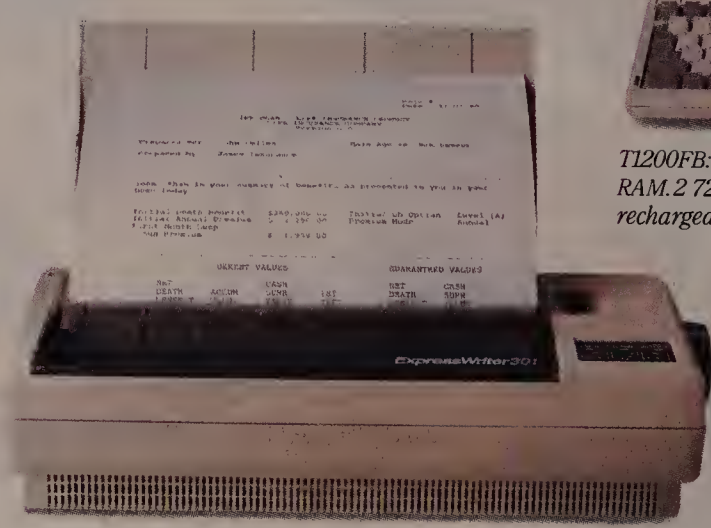
We develop products on the premise th

Page Laser12: 12 ppm, up to 3 paper bins, 750 sheet capability, Toshiba/Qume, Diablo, IBM & HP emulations.

T1000: 6.4 lbs, 4.77MHz 80C88, 512KB RAM expandable to 1.2MB. MS-DOS in ROM, 720KB 3½" diskette drive. Built-in RGB, parallel, serial and external drive ports.

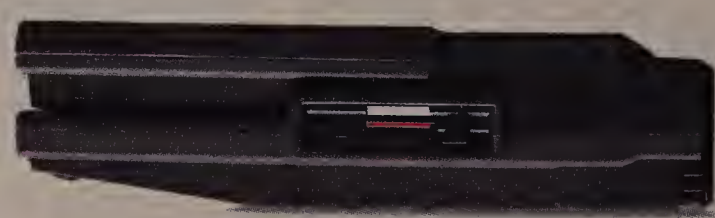
P341SL: Wide carriage (up to 270CPL), 216/ cps, advanced paper handling, 4 part forms.

T1200FB: 9.8 pounds, 9.54MHz 80C86, 1M RAM. 2 720KB 3½" floppy drives, removab rechargeable battery pack.



ExpressWriter 301: 4 lbs, letter-quality 24-dot print head, 60 cps, Toshiba/Qume and Epson LQ emulations, 5 resident fonts.

T3100e: 12MHz 80286, internal IBM slot, 20MB hard disk, gas plasma display, 1MB RAM expands to 5MB. 1.44MB 3½" diskette drive.



T5100: 16MHz 80386 microprocessor, 40 or 100MB hard disk, 2MB RAM expandable to 4MB. 14.6 lbs. Built-in EGA display with high resolution gas plasma screen.

P351SX: 360/120 cps, 24-pin letter quality, color option, Toshiba/Qume and IBM emulations standard, Epson & Diablo emulations optional

reat minds don't think alike.

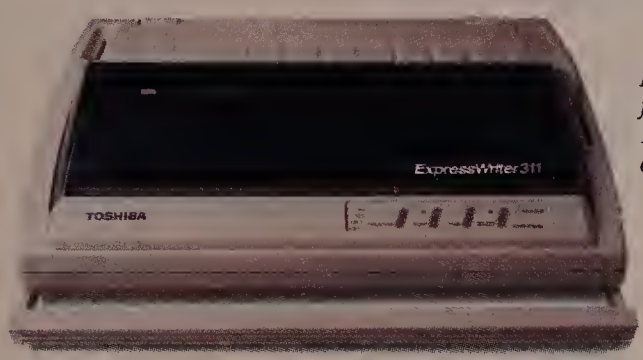
1600: 11.6 lbs, Battery-powered 12MHz 286, 20MB hard isk, 1.44MB floppy. 1MB RAM expands to 5MB, backlit GA LCD, removable/rechargeable battery packs.

T5200: 20MHz 80386 processor, 2 internal IBM compatible expansion slots, 40 or 100MB hard disk, VGA display with external VGA monitor port, 2MB RAM expandable to 8MB.

T3200: 12MHz 286, 2 IBM compatible slots. 40MB hard disk, 1.44MB floppy, 1MB RAM expands to 4MB, EGA screen.

© 1989 Toshiba America Computer Systems Division

Carrying cases: vailable in leather or fabric, make ur portable PCs even more portable.



ExpressWriter 311: 24-pin dot matrix, 180 cps draft/60 cps letter quality, 3 resident emulations (Toshiba/Qume, Epson LQ, IBM Proprinter), 16K buffer, 5 resident fonts plus card slots, 11 lbs.

Numeric Keypad: full function, 15 or 17 keys, for many of our portable PCs.

T1200HB: 10.8 lbs, 9.54MHz 80C86, 20MB hard disk, 1MB RAM, includes 384KB LIM-EMS. Removable/rechargeable battery pack.

P321SL/SLC (color): 216/72 cps, 24-pin letter quality, up to 360x360 DPI graphics, Toshiba/Qume and IBM emulations standard, Epson and Diablo emulations optional, 32KB print buffer, front panel controls, advanced paper handling.

People have their own quirky ways of doing things. Some think fast. Some slow. Some are deliberate. Some intuitive. Some work from 9 to 5. Others never stop.

That's precisely why we offer so many different products.

Including the widest range of truly portable PCs anywhere.

And a line of printers that includes everything from a high volume laser to a four-pound, letter-quality, battery-operated portable.

All of which can be easily networked. But all of which are designed to meet the specific needs of each of our individual users.

Because the fact is, at Toshiba, we have an incredibly diverse and sophisticated customer base.

And from what we've been able to determine they have only one thing in common.

They're all different.

In Touch with Tomorrow

TOSHIBA

Toshiba America Information Systems, Inc., Computer Systems Division

Circle 285 on reader service card

Polished Presentations

With the right tool, you can turn humdrum data into informative and convincing visuals, without jumping through hoops.

Seven business graphics programs help you practice the art of persuasion.

Richard Jantz and Michael Smith-Heimer

With solid graphics in spreadsheets like *Excel*, *Quattro*, *SuperCalc*, and *1-2-3* release 3, you may wonder if you really need a graphics package. If your brush with graphics consists of creating a quick black-and-white chart and slipping it into a report, stick with your spreadsheet. But if your job regularly requires standing up in front of a group and delivering your best shot, you need high-quality visuals, and that means using presentation graphics software.

Each of the seven popular products reviewed here enables you to do much more than crank out charts from data sets. *35mm Express*, *Draw Applause*, *Freelance Plus*, *GEM Presentation Team*, *Graph Plus*, *Harvard Graphics*, and *Xerox Presents* can all satisfy your business graphics presentation needs. Uniformly priced at $495, they deliver word charting, drawing tools, clip-art libraries, PostScript and 35mm-slide support, and even monitor-based slide shows.

Three of these packages offer the convenience of icon-based graphic interfaces and a WYSIWYG work area, courtesy of *Windows* and *GEM*. Ironically, the two winning entries, *Freelance Plus* and *Harvard Graphics*, use old-fashioned, full-screen input forms for building charts and make you switch modes to preview final output. Clearly, there's more to power and ease of use than pulldown menus.

From Ideas to Images

Effective presentations don't happen by accident. They begin with careful selection of data (including words) and depend on proper timing and execution. A good package should cover every step in the process—including entering data, choosing and modifying chart formats, picking fonts, adding art, and selecting the order of images—without making you jump through hoops.

Data Import Most graphics users also use spreadsheets, and those who don't soon discover that the data has to come from somewhere. Charting often involves last-minute variations in the same data, which must be updated, massaged in a spreadsheet, and then imported into the graphics package.

Hot linking is the ultimate in tying worksheets to charts. Once you specify the worksheet file name (and in better programs, the cell range) for a chart, any change made to the worksheet updates the chart automatically. For people who habitually use graphics for desktop data analysis, *Harvard Graphics* and *Graph Plus* offer their own built-in spreadsheetlike functions.

Even if graphics programs lack such functions, they hold data for charting in their own type of spreadsheet. To give you the flexibility you need, a package should be able to plot at least a half-dozen data sets (equivalent to columns) and 24 data points (equivalent to rows). Only *Xerox Presents* falls short of this minimum standard.

Chart Selection *Harvard Graphics*, *Graph Plus*, and *Freelance Plus* provide the richest set of charts in the roundup. Along with the usual assortment of bar, pie, and line charts, these packages supply mixed charts (such as bar/line); scatterplots (to show the correlation between two distributions); charts with dual vertical axes (to reveal the relationship between two trends); and high/low/close charts (for securities analysis).

Most of the packages include templates for every chart type. Each template makes the decision for you about fonts, colors, line styles, patterns, and so forth. Look for a program that enables you to tailor these templates to your own requirements so you can use them again and again. However, not even

Those who have neither the time nor the talent for drawing can avoid it entirely with clip art.

the most complete set of templates can accommodate all your presentation needs, and it's here that you'll appreciate a solid set of chart editing tools.

Chart Editing A few simple editing features can save you chronic headaches. For example, beginners quickly discover that the more data sets they have, the more likely labels along the horizontal axis are to overwrite each other. A good charting application lets you skip labels (dropping 1985 from between 1984 and 1986, for instance); better packages let you rotate labels by degrees.

Automatic scaling conveniently rounds off axis values and displays a label, such as "In Thousands," in the margin. However, not all packages let you decide how many zeros appear before rounding occurs. Similarly, most packages have handy predesignated positions for the legend, but only a few let you move the legend without considerable trouble.

Business graphics is an art of persuasion, and experienced chart makers know that lengthening the scale for profits, for example, can make a bad month look like a slight dip. Only *Xerox Presents* doesn't let you manually adjust scales on the axes; overall, *Freelance Plus*, *Harvard Graphics*, and *Graph Plus* have the best selection of chart-editing features.

Enhancements The first enhancement feature to look for is a wide array of high-quality fonts. After all, an estimated 70 percent of all charts are word charts, and attractive type styles give a chart a polished look. Every package reviewed offers a PostScript driver, but not every user has a PostScript printer. The LaserJet is the common denominator for laser printers, and if a package includes (or is compatible with) Bitstream fonts, you'll have LaserJet type of excellent quality.

When most people think of artistic enhancements, they think of drawing. But those who have neither the time nor the talent for drawing can avoid it entirely with clip art. Choosing a symbol from a library and dropping it in a chart is one of the easiest ways to add life. For maximum impact, you can place a scanned photograph of a company product or an ideal customer alongside a chart instead of a generic symbol.

Freelance Plus and *Graph Plus* deliver more drawing power than any of the other programs reviewed. One of their crucial features is curve smoothing of freehand lines. Smoothed, vector-based curves are far easier to manipulate than simple splines, especially for forming complex objects.

A top-notch program should also let you pick polygons, circles, arcs, ellipses, and other shapes from readily accessible menus and dynamically size objects at will. When you can select all or a subset of objects and flip, rotate, or zoom in on them with ease, the drawing process hums.

Output Most graphics packages drive a slew of devices, but you usually have only two practical choices of output. For high-powered, professional presentations, color slides are a necessity. For reports, in-house meetings, and other less momentous occasions, you'll want black-and-white handouts or overhead transparencies printed on a laser printer—dot matrix output is suitable for previews only. A lucky few can justify the cost of a plotter or a color ink jet printer for color transparencies.

Put together a string of charts for a slide presentation, and any package reviewed here can generate output files that one or more commercial slide services can turn into slides. The resolution and color quality these services offer are a magnitude better than those of a desktop slide camera; in addition to expressing the slides overnight, many offer extras, such as special fonts or graduated background shading missing from the originating graphics program. Packages with built-in telecommunications, such as *35mm Express* or *Draw Applause*, make the process smoothest.

If you want to print chart handouts to go with your slide show, only *Harvard Graphics*, *Freelance Plus*, and *35mm Express* automatically convert solid colors to black-and-white patterns. With the remaining programs (except for *Draw Applause*, which offers no patterns at all), the only way to "automatically" produce a black-and-white pattern is to use color patterns for slides.

You can run a monitor-based slide show with any of the packages, but the quality varies. The best programs provide control over how fast each slide appears and how

long it remains on screen, along with such transitions as fades, wipes, and dissolves. With *Freelance Plus*, you can even produce a disk-based slide show that runs on other PCs without requiring the program.

35mm Express 4.1

Until *Draw Applause*, *35mm Express* was the program to beat if you wanted slides. It offers excellent color control, handy default formats, and a built-in communications module for sending output to slide services. But file handling and the user interface are cumbersome, and while the drawing features are strong, other programs provide more charts and drawing tools.

35mm Express is the only package reviewed that makes you generate a chart in *1-2-3* before you import the worksheet data. Worse, the outdated method of file management (which requires fixed-capacity "folders" and "cabinets") is needlessly restrictive.

Except for the missing bar/line option, the program supplies an adequate selection of charts, but the number of data points is a bit low. The program has two high-quality, built-in typefaces, but it can't use Bitstream fonts.

The menus sometimes group related features on different menus, leading to needless mousing around. And although the options for freehand drawing and object manipulation top those of *Draw Applause*, they're a notch below the ones in *Freelance Plus* or *Graph Plus*. You won't find rulers, grids, or snap-to-grid functions, for example, and there's no support for scanned images. However, the clip-art library, along with separately available additions, may provide all the images you need.

35mm Express still glitters when it comes to color. You get up to 64 colors per chart, and cycling through an intelligent array of default color combinations—including color-coordinated 3-D effects—can produce quick results. Drop shadows supply the finishing touches, while a summary screen for colors speeds last-minute changes. The program also offers the best slide camera support.

For proofing or handouts, the program automatically converts colors to fill patterns. However, because some of the patterns are quite similar, you may need to change colors to produce readable hard copy. *35mm Express* also prints speaker's notes and offers a basic slide-show feature.

Superb color capabilities make *35mm Express* a smart choice for users willing to stick with good default formats and a basic set of charts. And the drawing features are quite good. Only *Draw Applause*'s special effects and slightly better charting edge *35mm Express* out of first place for slides.

EXECUTIVE SUMMARY

35mm Express 4.1

Business graphics program

A solid choice for quality slide presentations, *35mm Express* offers excellent color control and strong device support. But the user interface could stand some work, and *Draw Applause* has better effects.

	POOR	FAIR	GOOD	EXCELLENT
Charting			●	
Data import		●		
Enhancement			●	
Output			●	
Overall value			●	

Reader service no. 665

Draw Applause 1.1

Sometimes, even if a product is weak in key areas, its unique features make it irresistible. That's *Draw Applause* all over. In version 1.1 (due to be upgraded), a graceless user interface, restricted data entry, and a lack of fill patterns add up to a weak general-purpose graphics package. Use it for slides, though, and the special effects will convince you that you can't live without it.

Want to apply shading to any object, including text? No problem. Expend more effort, and you can take two copies of a logo—one small, one large—and produce shaded, overlapping duplicates in between to create a sense of motion and depth; you can even twist the duplicates into a spiral. *Draw Applause* is the only package reviewed that in-

Use Draw Applause for slides, and the special effects will convince you that you can't live without it.

FEATURES EVALUATION

Presentation Graphics: Three Standouts

Thanks to rich charting and chart-editing functions, Freelance Plus, Harvard Graphics, and Graph Plus can help you produce professional-looking presentations without making you bend over backwards. (Note: We've given credit for charting features only when you don't have to enter a separate draw module.)

● Yes
○ Na
◒ Deficient
△ Limited anly by available RAM

	35mm Express 4.1	Draw Applause 1.1	Freelance Plus 3.01	GEM Presentation Team 1.1	Graph Plus 1.3	Harvard Graphics 2.12	Xerox Presents 1.0
Charting							
Bar graphs							
Vertical/horizontal bars	●	●	●	●	●	●	●
Maximum data sets per chart	12	10	8	12	△	8	4
Maximum data points per set	60	150	140	50	△	240	20
Overlapping bars	○	○	○	○	●	●	○
Bar/line graphs	◒ [1]	●	●	●	●	●	○
Pie charts							
Maximum slices per pie	12	16	16	20	△	12	20
Maximum exploded slices	12	16	16	20	△	12	0
Two- or four-pie charts	◒ [1]	◒ [1]	●	◒ [1]	◒ [1]	●	◒ [1]
Line graphs							
Scatter plats	○	○	●	●	●	●	●
Maximum line styles	1	2	7	1	5	4	1
Maximum line markers	0	0	8	6	10 [2]	13	16
Maximum data points per line	60	150	500	101	△	240	20
Maximum data sets per line graph	12	10	8	12	△	8	4
Area graphs	●	●	●	●	●	●	●
Chart editing							
Manual setting of minimum/maximum	●	●	●	●	●	●	○
Colors per chart	64	64	12	8	16.8 mil [3]	16	256
Fill patterns per chart	64	0	14	18	40	12	16
Freeform legend location	○	●	●	●	●	○	○
Other charting features							
High/law/close	○	○	●	○	●	●	○
Full data manipulation	○	○	○	○	●	●	○
Dual y-axes	○	●	●	○	●	●	○
Skips labels	●	●	●	●	●	●	○
Vertical/horizontal axis labels	○	○	●	○	●	◒ [4]	○
Automatic scaling	○	○	●	●	●	●	○
Saves customized templates	●	◒ [5]	●	◒ [5]	●	●	●
Auta color–to–black-and-white canversion	●	○	●	○	○	●	○
Enhancement							
Text							
Built-in typefaces	2	3	3	3	3 [6]	6	7 [6]
Supports Bitstream fonts	○	○	●	●	●	○	●
Drop-shadowed text	●	●	●	○	○	●	○
Ability to ratate text	○	●	●	○	●	○	○

Enhancement (continued)	35mm Express 4.1	Draw Applause 1.1	Freelance Plus 3.01	GEM Presentation Team 1.1	Graph Plus 1.3	Harvard Graphics 2.12	Xerox Presents 1.0
Clip art							
Clip-art images included	250+	125	900+	250+	500+	300+	30+
Additional images available	●	○	●	●	●	●	●
Chart background							
Color selection	●	●	●	◒ [7]	●	●	●
Displays graduated shading	○	●	○	○	◒ [8]	○	●
Drawing							
Line types/widths	1/8	2/7	6/5	4/8	5/unlimited	4/99	5/5
Fill patterns	64	0	14	37	40	16	16
Freehand drawing	●	○	●	●	●	○	●
Curve smoothing	●	●	●	○	●	●	○
Zoom feature	●	●	●	●	●	○	●
Undo command	●	○	◒ [9]	◒ [9]	●	◒ [9]	●
Select object subset	●	●	●	●	●	○	○
Flip objects	●	●	●	●	●	○	○
Rotate objects	●	●	●	●	●	○	○
On-screen ruler	○	○	○	●	●	○	●
Grid	○	●	●	●	●	●	●
Snap-to-grid	○	●	●	●	●	●	●
Output							
Desktop slide shows							
Number of images permitted	32	99	100	36	△	90	90
Transition options	1	1	14	1	14	11	14
Creates run-time shows	○	○	●	○	○	◒ [10]	○
Device support							
HP LaserJet/Plus	●	●	●	●	●	●	●
PostScript driver	●	◒ [11]	●	●	●	●	●
HP HPGL-compatible plotters	●	●	●	◒ [12]	●	●	○
Communications module within program	●	●	○	○	○	●	●
Data import							
.WKS	◒ [13]	○	●	●	●	●	●
.WK1	◒ [13]	●	●	○	●	●	○
ASCII	○	○	●	●	●	●	●
dBASE	○	○	●	○	○	○	○
Metafile (CGM)	○	●	●	○	●	●	●
TIFF	○	○	◒ [14]	○	●	○	●

[1] Requires seporate merge procedure.
[2] Also enobles you to select ony keyboard character as a morker.
[3] Available through Windows.
[4] Letters still print in horizontal format.
[5] Word charts only.
[6] Includes Windows fonts.
[7] Color can be chonged only by using a filled box for entire frame.
[8] Ten shoded clip-art bockgrounds only.
[9] Undelete only.
[10] Program for generating run-time shows sold seporately.
[11] Driver is free but must be sent for separotely.
[12] Driver available at extra charge.
[13] Graph must be creoted in 1-2-3 before dota can be imported.
[14] Non-gray-scale files only.

An incredible breadth of features makes Freelance Plus 3.01 the best package in the roundup.

cludes a color reference card for its (64-color) palette. The card enables you to compose slides using the actual colors that will appear instead of on-screen approximations.

Draw Applause provides excellent templates for word charts, but the selection of graph types is basic. However, you get a larger capacity for data points than with *35mm Express*, and the option of dual *y*-axes. The program imports data files only in .DIF or .WK1 formats.

Unlike *35mm Express*, *Draw Applause* doesn't offer freehand drawing, and the drawing tools overall are a cut below those offered by *Freelance Plus* and *Graph Plus*. Incredibly, the program offers no fill patterns whatsoever; the only way to get them is through Ashton-Tate's slide service, for which a communications module is provided.

Draw Applause is the only program that makes you send away for its PostScript driver (although it's free), and it doesn't support Bitstream fonts. For rehearsals, you can display a timed series of full-screen charts but with no fancy transitions.

Rumor has it that a forthcoming upgrade will answer most of the major criticisms leveled at the current version, with changes ranging from a revamped user interface to a complete set of patterns. But even without these enhancements, *Draw Applause*'s effects still make it top banana for slides.

EXECUTIVE SUMMARY

Draw Applause 1.1

Business graphics program

Draw Applause's gargeaus calar graphics and unique special effects make slides sing. Weak data imparting features, however, limit its usefulness as a general-purpose package.

	POOR	FAIR	GOOD	EXCELLENT
Charting			●	
Data import		●		
Enhancement			●	
Output			●	
Overall value			●	

Reader service no. 666

EXECUTIVE SUMMARY

Freelance Plus 3.01

Business graphics program

Experience the ane-twa punch of superiar charting and extensive artistic control, and you'll agree that Freelance Plus can't be beat. Unsurpassed suppart for Latus spreadsheets makes it the perfect graphics campanion ta 1-2-3.

	POOR	FAIR	GOOD	EXCELLENT
Charting				●
Data import				●
Enhancement				●
Output				●
Overall value				●

Reader service no. 667

Freelance Plus 3.01

Lotus's *Freelance Plus 3.0* took a quantum leap beyond earlier versions, and version 3.01 adds two small but significant improvements: Memory requirements have shrunk from 640K to 508K (so you can run it on a networked PC), and the program now supports slide services. Couple these extras with an already incredible breadth of features, and *Freelance Plus 3.01* emerges as the best package in this roundup.

Though less intuitive than *Graph Plus*'s *Windows* interface, *Freelance Plus*'s two-line menu bar should be second nature to *1-2-3* users. Moreover, the hot links to *1-2-3* (including release 3.0) are unsurpassed. You can actually view an entire worksheet from inside the program and automatically display the named ranges. With such close *1-2-3* ties, *Freelance Plus*'s lack of data manipulation is no great loss.

Freelance Plus 2.0 was weak on charting, but with such options as area, bar/line, and high/low/close charts, version 3.0 introduced a chart selection that virtually matches that of *Harvard Graphics*. The program also offers high-quality fonts (with access to a

wealth of Bitstream typefaces), along with automatic text boxes and drop shadows.

The robust editing and drawing features are tops. You can slant or rotate text, control the depth of 3-D effects, and move legends wherever you like. Drawing tools include curve smoothing, a complete array of easy-to-manipulate geometric shapes, and the most versatile object-selection features available. The clip-art library is enormous, and if that's not enough, you can import scanned images (though not gray-scale ones).

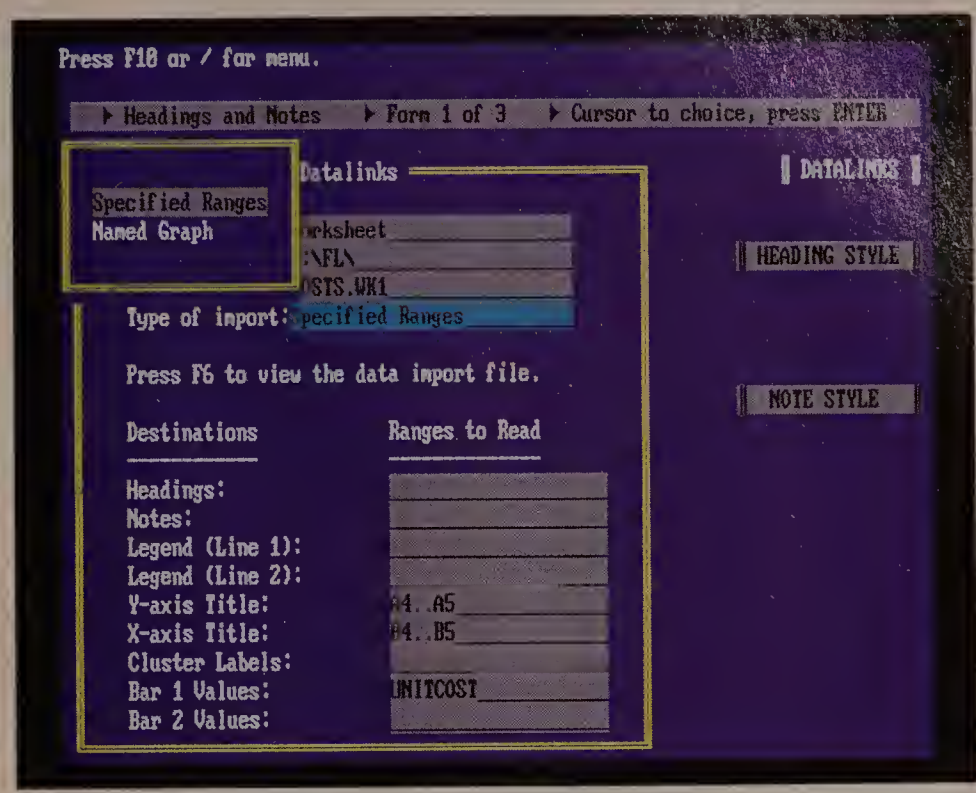
Like *Harvard Graphics*, *Freelance Plus* converts color into black-and-white patterns painlessly, and it does its rival one better by providing a black-and-white preview mode. The support for output devices is exceptional, and a slide-show function provides plenty of transitions and even generates run-time shows. A new file management module enables you to prepare and print an outline of your presentation.

For slides, you can do better than *Freelance Plus:* It's limited to 12 colors per chart, it lacks a communications module, and it doesn't offer shaded backgrounds (though slide services can add them). But for presenters who need both slides and black-and-white hard copy, no other program offers as much punch across the board, from charting, to drawing, to high-quality fonts, to output options. It's the best all-around solution and the perfect companion for *1-2-3*.

GEM Presentation Team 1.1

GEM Presentation Team is three programs in one, all of which run under the graphic *GEM* environment. *GEM WordChart* delivers the best word charting around, but the combined strengths of *GEM Graph* and *GEM Draw Plus* don't approach the power of *Freelance Plus* or *Graph Plus*. And the *GEM* trio is conspicuously lacking in advanced presentation features.

Like the *Windows* programs reviewed, *GEM Presentation Team* cultivates an interactive working style. Instead of filling in blanks on a separate screen to select charting or drawing options, you pull down a menu or pop up a dialog box while a WYSIWYG work area stays in view. Unfortunately, *GEM Presentation Team* doesn't offer the integration of any of the *Windows*-based presentation graphics programs.



Freelance Plus fits hand in glove with 1-2-3. You can hatlink charts, specify ranges for several data types, and even view a 1-2-3 worksheet.

Word charting doesn't get much easier than with *GEM WordChart*. You pick a style, enter text, and click on an icon to change such attributes as style, size, and alignment; a full selection of templates makes things easy. The bundled Bitstream starter kit ensures high-quality fonts on a laser printer, but you can install only two at a time.

GEM Graph offers basic charting, with high/low/close charts and dual *y*-axes notably lacking. It's particularly unfortunate that the

EXECUTIVE SUMMARY

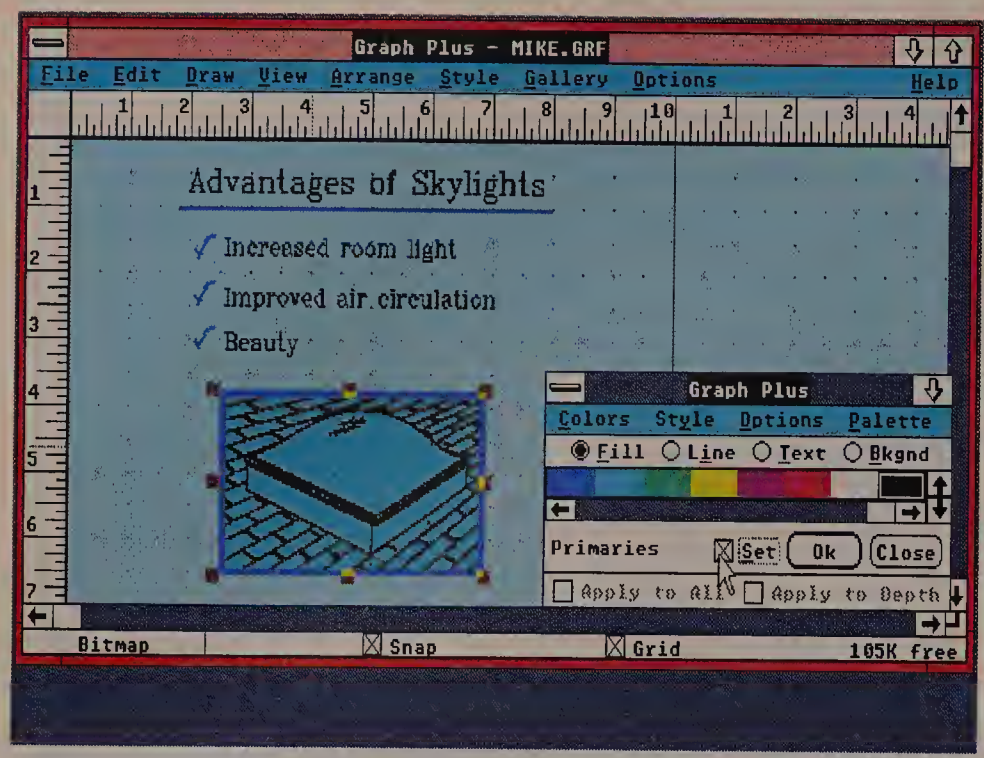
GEM Presentation Team 1.1

Business graphics program

GEM Presentation Team's point-and-click word charting is its best feature. However, the charting, data importing, and enhancement capabilities are for people with minimal requirements who prize ease of use above all.

	POOR	FAIR	GOOD	EXCELLENT
Charting			●	
Data import			●	
Enhancement				●
Output				●
Overall value				●

Reader service no. 668



Graph Plus couples a fine clip-art library with a rich set of drawing tools. The WYSIWYG work area gives you an ongoing preview of the final output.

package imports .WKS—but not .WK1—files. On the plus side, *GEM Graph* is the only program reviewed to offer pictographs, which liven up bar charts by substituting clip art for bars.

You can up the color ante to 16 in the draw program and employ one of 37 fill patterns. But if you want curve smoothing, lots of clip art, or support for scanned images, you won't find it in *GEM Draw Plus*. And once you enhance a chart in *GEM Draw Plus*, you can't reload it in *WordChart* or *Graph*.

GEM Presentation Team supports a sparse selection of printers, though you can buy additional device drivers from the company at nominal cost. Colors print as grays on black-and-white output devices, and the slide-show feature, like *Draw Applause*'s, is better for rehearsals than for desktop presentations.

For those who create word charts exclusively, *GEM Presentation Team* is worth considering, especially if you've already adopted other *GEM* applications. But for complex charting, sophisticated enhancements, or flexible data import, look elsewhere.

Graph Plus 1.3

Micrografx's *Graph Plus* is the third-best package in this roundup, coming in behind *Freelance Plus* and *Harvard Graphics* by a nose. It's the only program with data manipulation comparable to *Harvard Graphics*', and its enhancement features give *Freelance* a run for its money. Only data import and font support fall short.

Thanks to *Windows*, you can change the values in *Graph Plus*'s spreadsheetlike data input window and watch the graph change dynamically in the WYSIWYG work area. Unlike *Harvard Graphics* or *Freelance*, however, *Graph Plus* makes you strip the formulas from a *1-2-3* worksheet before you import the data, so hot linking is impossible. You can, however, hot link to *Excel* worksheets.

A large capacity for data, support for dual *y*-axes, and both log-log and semi-log scales will lure number crunchers, while the overall selection of graphs rivals the best. In addition, the program has a full set of arithmetic and logarithmic functions, including linear, exponential, and logarithmic regressions.

Graph Plus falters when it comes to word charts. You can use one of ten sample word charts as a model and overwrite the text or create word charts from scratch, but both methods require more work than using an empty predesigned template does.

The program combines excellent drawing tools with one of the highest-quality clip-art libraries available. You can apply up to 192 ready-made colors to a single chart, with additional color options available through *Windows*. And like *Xerox Presents*, *Graph Plus*

EXECUTIVE SUMMARY

Graph Plus 1.3

Business graphics program

With *Windows*-based ease of use, *Graph Plus* fosters superb customized graphics, thanks to extensive color control ond excellent enhancement tools. Only LoserJet font support and dato import fall short.

	POOR	FAIR	GOOD	EXCELLENT
Charting				●
Data import			●	
Enhancement				●
Output			●	
Overall value				●

Reader service no. 669

Our Swans make waves.

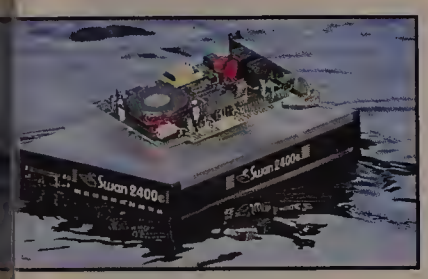
t're looking at a flock of Swans that are making waves in h computer industry. Waves that have many competitors ning for safer ground. Don't let their low price fool you. npatibility, reliability, performance and unsurpassed cus- er satisfaction have made Swan a bird of prey. No wonder. look at what Swan has to offer:

- **30-Day satisfaction guarantee**
- **Toll-free technical support**
- **Full one-year warranty**
- **Fast, sure delivery**
- **Sorbus® on-site service option**

Capture a Swan and put it to work for you in your home office. All Swan computers offer the top-rated Phoenix M BIOS to assure 100% compatibility. Just plug it in — l take off.

hen Add-Ons Begin to Add Up... all Swan Toll-Free 1-800-468-9044

an brand name peripherals inherit all the quality and ue you find in Swan computers. And Swan Technologies ps good company ... with unsinkable values from the rld's leading software and hardware manufacturers. Call ay and ask for our free catalog.



Swan Modems

e the world your partner. With the Swan em, you'll be able to communicate with other nd information services around the world gh your pulse or touch tone phone. You'll nto a world of data and broaden your hori- Every Swan Modem comes complete with nunication software & full documentation.

ayes® compatible • Auto answer/dial clude PC Talk III software

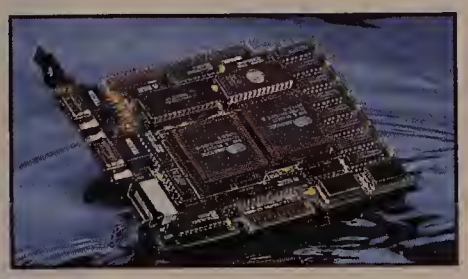
bd internal* $99
bd internal $69
bd external $149
bd external $89

ides Bit Com v 3.5 software

Swan Tape Backups

ect that nest of important data stored on hard drive. Swan Tape Backups store 40MB single tape cartridge ... reliably, conven- y and economically. A Swan tape drive can stalled on any Swan computer and most XT- T-compatibles.

IB XT or AT Internal $299
IB XT or AT External $399



Swan Video Cards

Different people have different uses for their PC's ... from everyday uses like word processing and spreadsheets to today's more demanding applications, such as desktop publishing and presentation graphics. A Swan video card can help you better meet your needs today ... or help you ride the wave of technology into tomorrow.

Switchable Card • Hercules® to CGA
• Parallel Port $69

EGA Card • EGA/CGA/TTL
• 640 x 480 Resolution $149

VGA Card • Register-level compatible
• 256K RAM • 17 VGA Modes $179

$1899

Base System with Single Floppy, No Video

386/20D	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono	14"Flat Mono	VGA Mono	VGA Color
w/48MB (28ms) & 1:1 Interleave	$2399	$2448	$2598	$2898
w/80MB (28ms) & 1:1 Interleave	$2749	$2798	$2948	$3248
w/150MB (18ms) ESDI w/1:1 Interleave	$3394	$3443	$3593	$3893

$Call for Upgrade to 2MB

$1399

Base System with Single Floppy, No Video

386SX	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono	14"Flat Mono	VGA Mono	VGA Color
w/32MB (40ms) & 1:1 Interleave	$1799	$1848	$1998	$2298
w/48MB (28ms) & 1:1 Interleave	$1899	$2048	$2198	$2498
w/80MB (28ms) & 1:1 Interleave	$2249	$2298	$2448	$2748
w/168MB (15ms) ESOI w/1:1 Interleave	$2894	$2943	$3093	$3393

$Call for Upgrade to 2 MB

Standard Features	XT10	286/12	386SX	386/20D
CPU	8088-1	80286	80386SX	80386
Speed (MHz)	10/4.77	12.5/6.25	16/8	20/8
BIOS	Phoenix	Phoenix	Phoenix	Phoenix
Norton SI Rating v 4.0	2.1	12.3	17.6	22.0
Standard Memory	640K	512K	1MB	1MB
Shadow BIOS	—	Yes	Yes	384K
Memory Upgrades	—	640K/1/2/3/5MB	2/3/5/6/8MB	2/4/8/10/16MB
Coprocessor Support	8087	80287	80387SX	80287 or 80387
Expansion Slots: 32-bit	—	—	—	1
Expansion Slots: 16-bit	—	6	6	4
Expansion Slots: 8-bit	8	2	2	3
Dual HD/FD Controller	w/HD systems	Yes	Yes	Yes
Device Bays (Exposed/Internal)	2 Exp./2 Int.	3 Exp./2 Int.	3 Exp./1 Int.	3 Exp./2 Int.
Serial Ports	1	1	1	2
Additional I/O Ports	1 Par/1 Game	1 Parallel	1 Parallel	1 Parallel
Power Supply	150W	200W	200W	200W
Keyboard (Touch & Click or Silent)	101 Key	101 Key	101 Key	101 Key
Additional Features	Clock Calendar w/Battery Backup and Setup/Utilities Disk			
3.5" Floppy Drive	Optional	Your choice	Your choice	Your choice
MS-DOS & GW BASIC add $89				

$899

Base System with Single Floppy, No Video

286/12	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono	14"Flat Mono	EGA	VGA
w/32MB (40ms) & 1:1 Interleave	$1299	$1348	$1698	$1798
w/48MB (28ms) & 1:1 Interleave	$1399	$1448	$1798	$1898
w/80MB (28ms) & 1:1 Interleave	$1749	$1798	$2148	$2248

$549

Base System with Single Floppy, No Video

XT10	VIDEO OPTIONS Include Monitor & Video Adapter			
Drive Options	Mono†	CGA	EGA	VGA
Single Floppy	$699	$869	$1098	$1198
Dual Floppies	$779	$949	$1178	$1278
*w/32MB (40ms) Hard Drive	$979	$1149	$1378	$1478

* Includes Single 360K Floppy Drive
† Upgrade from 12" to 14" Flat Screen, add $49

TUSSEY COMPUTER PRODUCTS
3075 Research Drive • State College, PA • 16801

der: No surcharge on Discover, Visa, MasterCard or X. • Your credit card is not charged until your order pped. **Shipping:** 3% or $5 minimum for UPS Ground. or shipping charges on Express Air, APO, FPO, AK, nd all foreign orders. • If part of your order is ordered, the remainder will be shipped UPS Ground. low 2 weeks for personal and company checks to • ALL SALES ARE FINAL (except Swan products — returned must be as-new, without modification or age. Sorry ... shipping charges and upgrade fees are efundable.) • Defective items replaced or repaired at liscretion. • PA deliveries add 6% sales tax. • Prices erms subject to change without notice. **Open:** 8a.m.- n. Mon-Fri, 10a.m.-8p.m. Sat, 12p.m.-8p.m. Sun.

Order Now Toll-Free
1-800-468-9044
FAX: 814-237-4450 • International: 814-234-2236

Call today and ask for our free catalog.

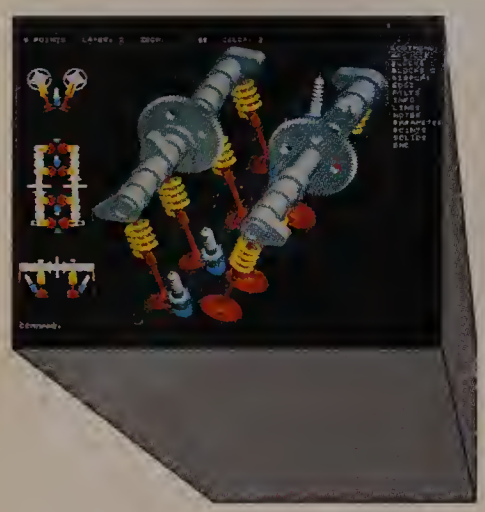
S=PWK1

Circle 207 on reader service card

Aw . . . What the Heck!

EXTREMELY POWERFUL

DesignCAD 3-D version 2.0 is as powerful as most CAD systems costing $5000 - $10,000! Features like: Complex Extrusions-linear, scaler, and circular, Blending of Surfaces, Shading, Cross Sectioning, Complex Sweeps and Translations, and Boolean operations make DesignCAD 3-D one of the most powerful 3-D CAD systems available . . . at any price! Engineers, Architects and Consultants constantly tell us that they use CAD systems costing thousands of dollars which are not as powerful as DesignCAD 3-D.



VERY EASY TO USE

Just because DesignCAD 3-D is powerful doesn't mean it is difficult to use. Single keystroke commands and side-bar menus which give short directions on how to proceed make DesignCAD 3-D a snap to use! While not required, DesignCAD 3-D supports all popular digitizers and mice.

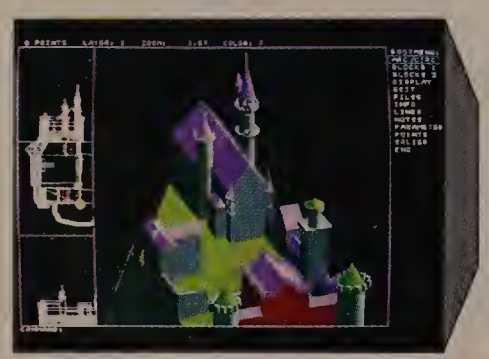
Many of the older, more cumbersome CAD systems require weeks of training before a user can be productive. DesignCAD 3-D users find they can be producing useful drawings in a matter of minutes! In a recent CAD contest only one contestant was able to match our drawing time. The package sold for $3000.00. The other CAD packages took up to twice as long to perform the same drawing and cost up to $5000.00!

Still don't believe us? The goblet pictured below required only 16 keystrokes and 3 commands to create! The top, front, side, and isometric views were created simultaneously . . . in less than one minute!

VERY LOW PRICED

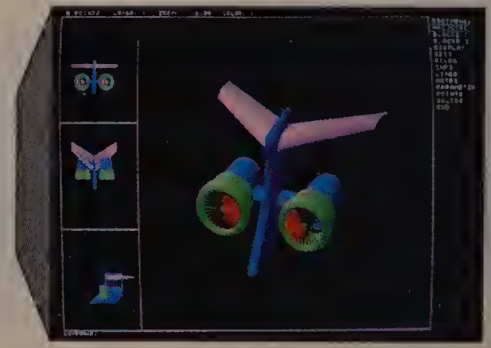
The first question asked by many people is, "Why is DesignCAD 3-D priced so low?" The answer? After developing DesignCAD 3-D version 2.0, we were unable to decide how the product should be priced. We consulted experts. We used the finest spreadsheets on the market. We took employee polls. Finally, in the great American Tradition, we said, *"Aw . . . What the Heck! Let's see the other guys beat this price!"* DesignCAD 3-D version 2.0 sells for $399.

DesignCAD 3-D only $399!



WHY BUY THIS ONE?

There is a very important reason to buy DesignCAD 3-D. PERFORMANCE. No other CAD system can match our price/performance ratio. Many people make the serious mistake of thinking that it is necessary to spend thousands of dollars to obtain "a good 3-D CAD system." This is not true! We talk to people everyday that are sadly disappointed with their "expensive" CAD systems. Don't be one of them! Call us and we will send you a complete set of literature and a free slide show demo disk. Once you compare DesignCAD 3-D version 2.0 with other CAD systems we know you will choose DesignCAD 3-D.



DON'T TAKE OUR WORD FOR IT

Here is what other people have to say about DesignCAD 3-D:

"After you've worked with DesignCAD, the single keystroke commands are simple to remember and it becomes easy to "flick one key" to execute a command. An extremely ergonomically designed program."

HENRY LEVET, Levet & Daigle Architects - New Orleans, LA
Designed a 65,000 sq. ft. nursing home using DesignCAD

"Recently I worked with a firm that builds decks. They purchased your product on my recommendation. I sat down with them and in two hours they were very proficient in DesignCAD. Now they are more effective; and we can communicate . . . it's wonderful to be able to do a block repeat 42 times and there are 42 2x4's to make the deck!"

J. TURNER, Architect, TAO Ltd. - The Woodlands, Texas

"Allows scientists and engineers to expend minimum time learning and using CAD software so that their time can be expended on the project at hand. It also allows scientists and engineers to quickly present to management all views of a subject. (3-D)."

DR. STEVENS, NASA Space Scientist/Engineer

HOW DO I GET ONE?

DesignCAD 3-D version 2.0 is available from most retail computer stores, or you may order directly from us. DesignCAD 3-D is available in a number of foreign languages from distributors throughout the world. All you need to run DesignCAD 3-D is an IBM PC Compatible and 640K RAM. DesignCAD 3-D supports most graphics cards, printers, plotters and digitizers. Free information and a demo diskette are available by contacting us at:

American
Small Business Computers, Inc.

327 South Mill Street
Pryor, OK 74361
918/825-4844
FAX: 01-918-825-6359
TELEX: 9102400302

Circle 306 on reader service card

lets you import scanned gray-scale images and preview them on screen.

A run-time version of *Windows* boasts a slew of printer drivers, including one that provides full access to PostScript printer fonts. If you want any Bitstream fonts, however, you have to buy them separately. *Graph Plus*'s capable desktop slide-show feature offers 14 transitions.

A lack of high-quality, built-in fonts and weak word-chart templates mar an otherwise superlative package. But if you use *Excel* (or such Micrografx products as *Designer* or *Draw Plus*), *Graph Plus* is the presentation package for you.

Harvard Graphics 2.12

Harvard Graphics may not have a fancy *Windows* interface, but abundant templates and a commonsense menu structure make it the easiest-to-use charting tool reviewed. At the same time the program offers the most powerful data-manipulation features and the richest array of charts. As a drawing program, however, *Harvard Graphics* leaves a lot to be desired.

When it comes to features like regression analysis, only *Graph Plus* can compete with *Harvard Graphics*. And although *Harvard Graphics* lets you specify named ranges when importing *1-2-3* data, *Freelance Plus* offers better import features. But in some areas, *Harvard Graphics* stands alone. It's the only program with a LAN version, a macro recorder, and a spelling checker (to prevent every presenter's worst nightmare).

Thanks to a nice assortment of templates, you can create attractive word charts easily. Although it offers the greatest number of built-in fonts, the package lacks *Freelance Plus*'s ability to rotate text, and Bitstream fonts are not supported.

Drawing is *Harvard Graphics*' Achilles' heel. It lacks many of the enhancement tools provided by *Freelance Plus* and *Graph Plus*. For example, you can't draw freehand or flip, mirror, or rotate objects. Worse, *Harvard Graphics* is the only program missing a zoom command for touch-up work. The program's clip-art library is less extensive than those offered by *Freelance Plus* or *Graph Plus*, and you can't import scanned images.

Harvard Graphics' device support is legendary, and a built-in communications module makes sending color slides to service bureaus a snap. Converting colors to black-and-white fill patterns is completely automatic, even slightly easier than with *Freelance Plus*. You can print speaker's notes for your presentation, and a fine slide-show feature is provided, but you must buy a separate utility to create run-time slide shows. *Harvard Graphics* offers a fine assortment of optional accessories, including additional templates, specialized clip-art libraries, and so on.

Strong charting, with arithmetic and logarithmic functions, is *Harvard Graphics*' standout feature, but ease of use keeps its users loyal. Those who want to turn out attractive charts quickly could hardly have it easier. But if you think you'll ever outgrow the preformatted approach to charting, *Harvard*'s slim set of enhancement features may send you in search of *Freelance Plus*.

EXECUTIVE SUMMARY

Harvard Graphics 2.12

Business graphics program

Harvard Graphics' abundant templates, powerful number crunching, and slick data import yield excellent charts in a snap, but limited drawing capabilities restrict its versatility.

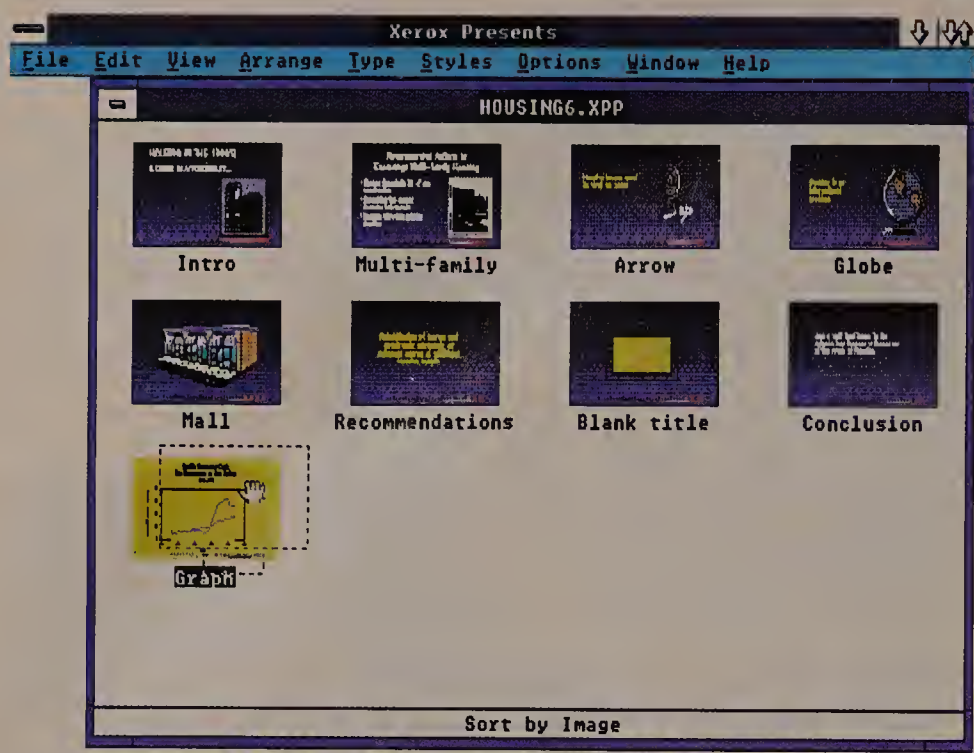
	POOR	FAIR	GOOD	EXCELLENT
Charting				●
Data import				●
Enhancement			●	
Output				●
Overall value				●

Reader service no. 670

Xerox Presents 1.0

Recently ported from the Macintosh to the *Windows* environment, *Xerox Presents* represents a new class of PC business graphics program. Its unique and useful features focus on controlling slide presentations: arranging the order of images, creating uni-

Start thinking of the presentation as a whole, and you'll quickly see the benefit of Xerox Presents.



With Xerox Presents, you can easily shuffle slides as you develop a presentation, thanks to a special multiple-image preview mode.

form backgrounds, generating handouts, and the like. Unfortunately, *Xerox Presents* is a poor charting package, and it's much slower than any other program reviewed.

A narrow range of chart types handles only four data sets and 20 data points per chart—less than two years' worth of monthly data. Scaling and axis options are especially weak: You can't set minimum/maximum axis values, place the *y*-axis on the chart's right side, or skip axis labels. As with *GEM Presentation Team*, *Xerox Presents'* ability to import *1-2-3* spreadsheets begins and ends with old-fashioned .WKS files.

EXECUTIVE SUMMARY

Xerox Presents 1.0

Business graphics program

A one-of-a-kind program for presentation design, Xerox Presents' outstanding color support and unique scripting aids can't offset its sluggish performance and limited charting.

	POOR	FAIR	GOOD	EXCELLENT
Charting	●			
Data import		●		
Enhancement			●	
Output			●	
Overall value		●		

Reader service no. 671

On the plus side, the program furnishes an impressive set of templates, a full-featured text editor, and up to 256 colors per chart. A Bitstream starter kit ensures high-quality fonts on LaserJet-compatible printers.

Xerox Presents joins *Graph Plus* as one of the two programs reviewed that imports scanned gray-scale images. You also get a good selection of line types, geometric shapes, and fill patterns, but you can't smooth curves automatically or flip and rotate objects, and the clip-art library is the smallest in the roundup.

Start thinking of the presentation as a whole, however, and you'll quickly see the benefit of *Xerox Presents*. Each slide has two layers, enabling you to use a uniform background—containing, say, a border, a shaded background, and a logo—while you use the top layer for different charts. Furthermore, a preview mode displays thumbnail sketches of up to 12 slides per screen, enabling you to rearrange images at will. No other package has equivalent features.

Handouts can include notes along with black-and-white renditions of slides, and you can create separate speaker notes with their own black-and-white images. Not surprisingly, the monitor-based slide show features are also innovative, though you can't create run-time presentations.

Because slides, backgrounds, handouts, and speaker notes are linked in the manner of a relational data base, you can shuffle items easily: You can even print handouts on one printer and speaker notes on another and send slides to a slide service using the built-in communications module. Doing so, however, makes printing slower than usual, and even with a black-and-white preview converting colors to patterns is not automatic.

Xerox Presents wouldn't be worth considering without its unique presentation features. The charting and data import features are clearly substandard, and it's probably not worth running on anything less than a 386. If a future revision eliminates current weaknesses, few who make frequent slide presentations will be able to resist it.

Introducing word processing with capabilities far beyond words.

Words alone can't give you the whole picture. DisplayWrite and OS/2 can.

Business doesn't live by words alone.

That's why the newest DisplayWrite® goes far beyond just word processing.

DisplayWrite 5/2 Composer™ lets you add photos and artwork to your text, reposition them, even flow type around them. A full-page, editable WYSIWYG display shows you how the printed page will look, and lets you zoom in to make changes. A wide range of typestyles and sizes lets your headlines holler, and finesses your fine print. You can even choose from over sixty printers, IBM or non-IBM. All to give even ordinary words extraordinary impact.

And since OS/2™ lets you multitask, you can run several DisplayWrite sessions at once—to edit one document, mail-merge a second and print a third, simultaneously.

DisplayWrite 5/2 Composer

Experienced users can bypass menus with fast-path commands, while beginners can choose pull-down menus and online help for easy learning. A spelling dictionary is built in; optional legal, medical and 17 foreign-language dictionaries are also available. There's even a new 800 number for free technical support.

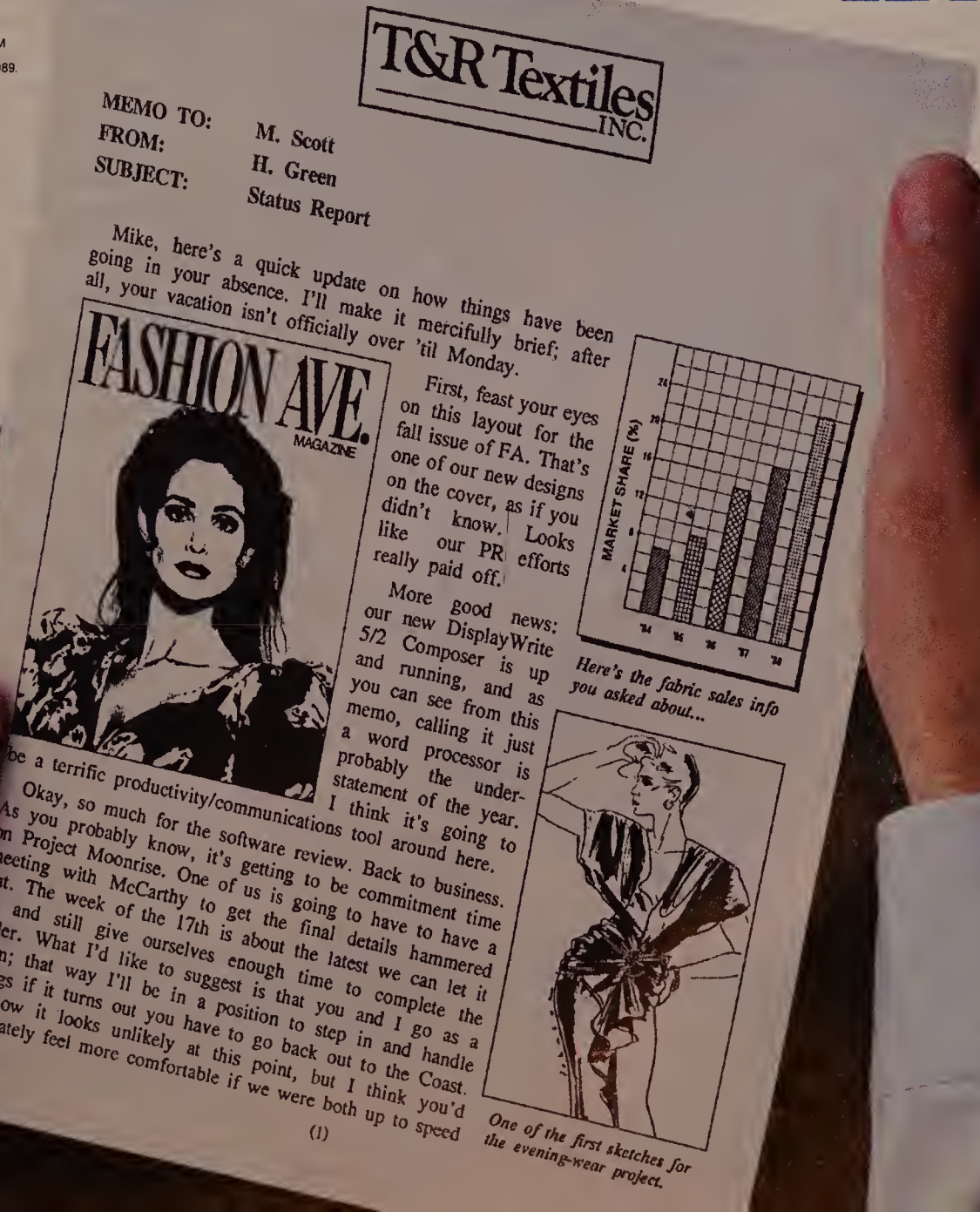
DisplayWrite 3 and 4 users can upgrade to 5/2 Composer at surprisingly little cost, and continue to use existing files. Simply call 1 800 IBM-2468, ext. 126 for upgrade information.

See your IBM Authorized Dealer or IBM marketing representative for more on DisplayWrite 5/2 Composer.

You'll see in graphic detail why words alone don't do it justice.

IBM®

DisplayWrite 5/2 Composer and OS/2 are trademarks and IBM and DisplayWrite are registered trademarks of International Business Machines Corporation. © IBM Corp. 1989.



Top Graphics Guns

What separates *Freelance Plus* and *Harvard Graphics*, the two top-rated programs, from the other products reviewed are their superior charting and data-import capabilities—especially their dynamic links to *1-2-3* spreadsheets. Of the two, *Freelance Plus* gives you more control over importing worksheets, more powerful chart editing and enhancement tools, and more slide-show versatility than *Harvard Graphics*.

Graph Plus is the best choice for *Windows* users, thanks to strong charting and drawing. With greater data import flexibility and more built-in fonts, *Graph Plus* could well edge out the competition.

The future of business graphics, however, lies with such special presentation talents as those exhibited by *Xerox Presents*. This package encourages you to think of graphics in a new way—as an endlessly adaptable complement to your spoken message. That's a powerful concept for presenters and one sure to be imitated. ●

Richard Jantz is a contributing editor for PC World. *Mike Smith-Heimer is a freelance writer and financial analyst who lives in Berkeley, California.*

For more information about all products in this article, circle reader service no. 913.

WHERE TO BUY

35mm Express 4.1
Business and Professional Software, Inc.
143 Binney St.
Cambridge, MA 02142
800/342-5277,
617/491-3377
LIST PRICE: $495
REQUIREMENTS: 256K (512K recommended), two disk drives, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited toll-free phone support, M–F 9–5; annual extended support including free upgrades and enhancements $250
OTHER SUPPORT SERVICES: disk-based tutorial $45, newsletter, user group
Reader service no. 665

Draw Applause 1.1
Customer Service Ashton-Tate
20101 Hamilton Ave.
Torrance, CA
90509-9972
800/227-4866,
213/329-8000,
408/268-1711 (tech support)
LIST PRICE: $495
REQUIREMENTS: 640K, hard disk, DOS 2.0 or later version
TECHNICAL SUPPORT: 90-day unlimited support, toll number, M–F 6–4:30; extended support including 15 calls, technical tips booklet, newsletter, CompuServe BBS
OTHER SUPPORT SERVICES: none
Reader service no. 666

Freelance Plus 3.01
Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
617/577-8500,
617/253-9150 (tech support)
LIST PRICE: $495
REQUIREMENTS: 640K, two disk drives, DOS 2.1 or later version
TECHNICAL SUPPORT: unlimited, toll number, T–Th 8:30–8, M and F 9:30–8; annual extended support including quarterly newsletter, toll-free number $150 (single user)
OTHER SUPPORT SERVICES: Master Kit training course materials $210, 90-day money-back guarantee, quarterly newsletter free to registered graphics users, CompuServe forum (GO LOTUSB)
Reader service no. 667

GEM Presentation Team 1.1
Digital Research, Inc.
P.O. Box DRI
Monterey, CA 93942
800/443-4200,
408/646-6464 (tech support)
LIST PRICE: $495, driver packs $10 each
REQUIREMENTS: 384K, hard disk, DOS 2.0 or later version
TECHNICAL SUPPORT: 90-day unlimited support, toll number, M–F 8:30–5; annual extended support including priority calling, special telephone number, free driver pocks $95
OTHER SUPPORT SERVICES: CompuServe GEM forum
Reader service no. 668

Graph Plus 1.3
Micrografx, Inc.
1303 Arapaho
Richardson, TX 75081
214/234-1769,
214/234-2694 (tech support)
LIST PRICE: $495, Standard Edition Clip Art Libraries $79.95 each (four available)
REQUIREMENTS: 512K (640K recommended), hard disk (80286 processor recommended), mouse, DOS 3.0 or later version
TECHNICAL SUPPORT: unlimited support, toll number, M–F 7–7, free subscription to newsletter; annual extended technical support including one year technical support, technical newsletter, free upgrades, discounts on new products $150
OTHER SUPPORT SERVICES: none
Reader service no. 669

Harvard Graphics 2.12
Software Publishing Corp.
1901 Landings Dr.
Mountain View, CA
94039-7210
415/962-8910,
415/962-9564 (tech support)
LIST PRICE: $495, Harvard Graphics LAN Pock $1795, Business Symbols $99, Screenshow Utilities $149, U.S. Mopmaker $149, QuickCharts $99, Designer Galleries $99
REQUIREMENTS: 512K, hard disk, DOS 2.0 or later version
TECHNICAL SUPPORT: unlimited free support, toll number, M–F 7:30–4:30
OTHER SUPPORT SERVICES: free user newsletter three times a year
Reader service no. 670

Xerox Presents 1.0
Xerox Desktop Software
9745 Businesspark Ave.
San Diego, CA 92131
800/822-8221,
214/436-2616 (tech support)
LIST PRICE: $495
REQUIREMENTS: 640K (1MB recommended), hard disk, 80286 processor (80386 recommended), DOS 3.1 or later version
TECHNICAL SUPPORT: 60 doys free, toll number, M–F 8–6; subscription to newsletter; annual extended support including toll-free number $100 for single user, $1000 for multiple users
OTHER SUPPORT SERVICES: one-day troining workshops
Reader service no. 671

A NESS MONSTER DEVOURS SILICON

FIFTH GENERATION SYSTEMS INVITES YOU TO

ENQUIRE

ABOUT FASTBACK PLUS

Incredible proof of reincarnation

MAN LOSES HAIR WAITING FOR DOS

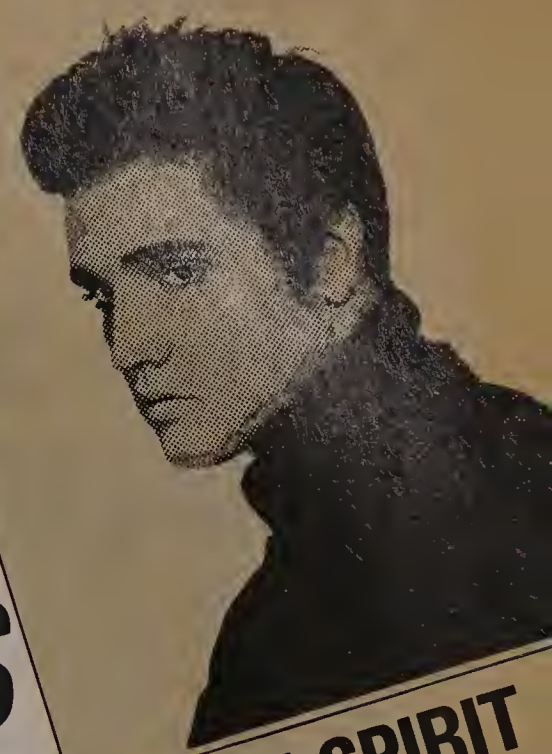
Anytown, USA—The unidentified victim was apparently among the millions of people who still think that DOS Backup and Copy commands are a safe and convenient way to back up their valuable hard disk data.

It is not known whether the shocking loss was a result of natural aging while DOS made the backup, or whether the victim pulled his hair out in frustration after discovering that a minor disk error had rendered his entire backup set useless.

According to reliable sources, the tragedy could have been averted if the man had been using **FASTBACK PLUS**, the world's fastest and most reliable backup software.

A special commission has been appointed to study ways in which the public can be made aware that **FASTBACK PLUS**' *Advanced Error Correction, easy-to-use menu, flexible file and directory selection, automated backup options* and other features allow even beginners to make fast, foolproof backups.

Public knowledge of these facts could ease the widespread stress and trauma that result from using DOS commands to back up hard disk data.

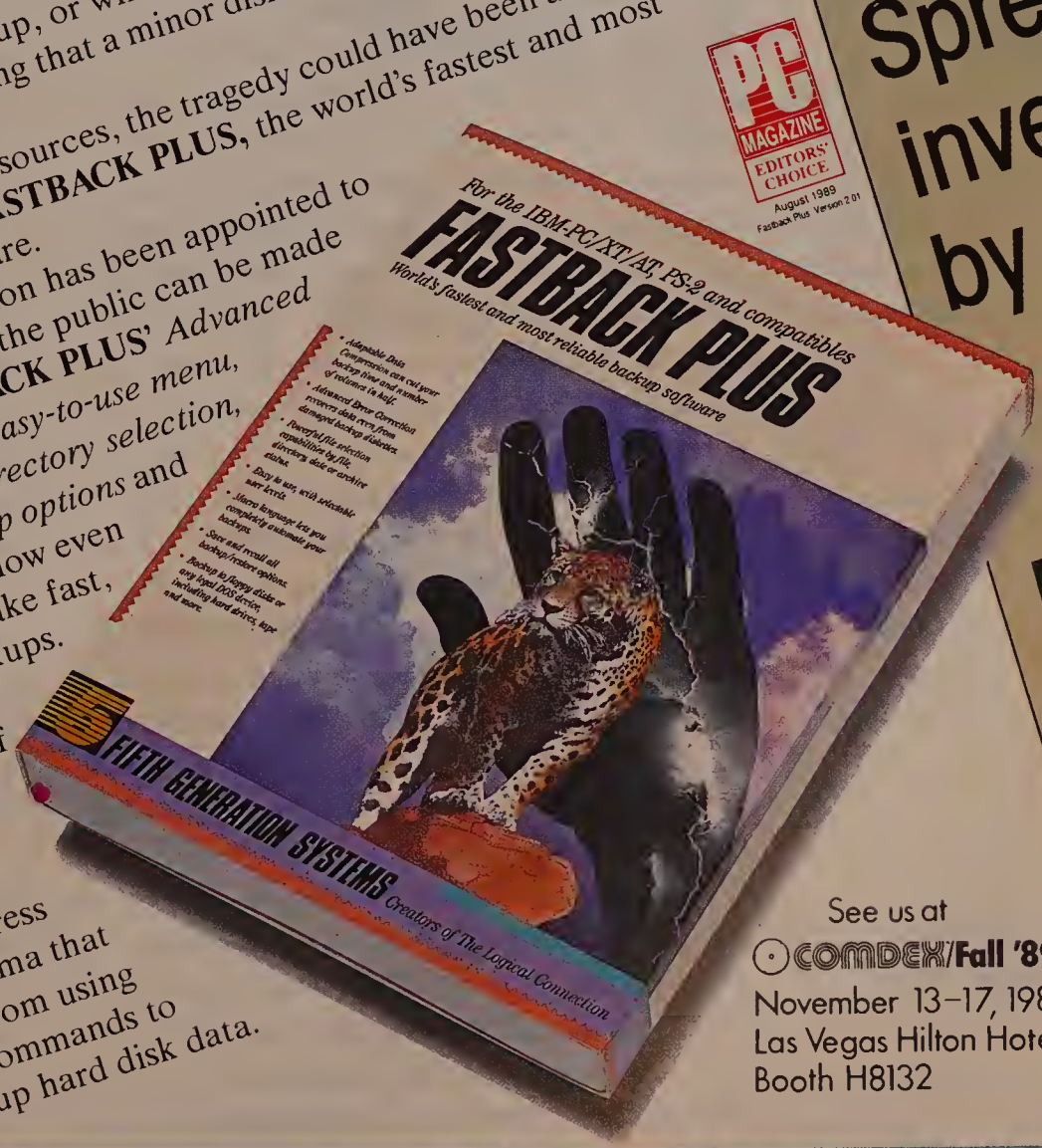


ELVIS' SPIRIT TRAPPED INS
MICROCHIP

Spreads
invente
by pre

Mon
has
bo
in

ride
on
steps
2 years
★★★★
industry
ntrolled
JFO aliens
★★★★★



See us at
COMDEX/Fall '89
November 13–17, 1989
Las Vegas Hilton Hotel
Booth H8132

This product is in no way associated with or has origination in Fisher Scientific or Allied Corporation.

FIFTH GENERATION SYSTEMS *The Creators of FastBack*

10049 N. Reiger Road Baton Rouge, LA 70809 (800) 873-4384 (504) 291-7221

Circle 71 on reader service card

Gray-Scale Scanners Enter the Mainstream

If you use black-and-white photos in DTP projects, gray-scale scanners provide an affordable alternative to halftones.

Our survey of five scanners turns up some nearly irresistible bargains.

Richard Jantz

If you're a desktop publisher who's tried to spice up a newsletter or brochure with photographs, you've probably discovered that conventional halftoning is time-consuming and innovative effects cost dearly. To gain greater control over your publication and speed up turnaround time, you can switch to a desktop gray-scale scanning system. This way you can scan digital halftones, integrate them into a document using a page-layout program such as *Ventura Publisher* or *PageMaker*, and print them on a high-resolution, PostScript-compatible phototypesetter. The digitized photographs come close to the quality of commercial halftones, and it's often easier—and cheaper—to create special effects. If you use a lot of photos, or if you can also use a scanner for other tasks, the investment will pay off.

This review evaluates five gray-scale scanning systems ranging in price from $1995 to $3995: the Datacopy Model 730GS, the Hewlett-Packard (HP) ScanJet Plus, the IBM PageScanner Model 3119, and the Microtek MSF-300G and MSF-400G. The Datacopy scanner assigns 6 bits of gray-scale data to each pixel, for a total of 64 shades of gray. The 8-bit PageScanner generates 128 grays, and the 8-bit HP and Microtek systems deliver 256 shades. All the scanners record images at a resolution of 300 dots per inch (dpi), and the MSF-400G also records 400 dpi.

All the scanners are flatbed units. Unlike sheet-fed models used for optical character recognition (OCR), which pull the original through the scanner, flatbed scanners let you carefully align the original and can scan material from books. The systems also include *Windows*-based software for controlling the scanning process and editing images. Each system includes an interface card that takes up a standard PC or Micro Channel slot, except for the IBM 3119's adapter, which fits only in a Micro Channel slot. An AT-level system and a VGA display are recommended, and VGA is required for the IBM and Microtek scanners.

The systems scan black-and-white line art and provide optional OCR software, but they're designed primarily for desktop publishers who need to output gray-scale photos on a laser printer or phototypesetter. Accordingly, they're evaluated with this task in mind.

A year ago, 4-bit, 16-gray-level systems were the standard, and today's bargain hunters may find some 4-bit steals. But if image quality is all-important, a 6- or 8-bit system

is the way to go. Compared to a 4-bit scanner, it offers better image quality when printing photos on a 300-dpi laser printer. The differences are even greater between 6- or 8-bit systems and the non-gray-scale scanners used for OCR work, though you won't see a disparity with line art.

It's in the higher resolutions that gray scaling shines. At resolutions higher than 300 dpi, non-gray-scale photos are unacceptable, and 4-bit photos aren't much better. With a 6- or 8-bit scanner, quality improves if you boost your 300-dpi printer's resolution with an enhancement board such as Intel's Visual Edge. You'll enjoy incremental improvements on 400- and 600-dpi laser printers and dramatic differences on 1200-to-2540-dpi typesetters. The gap between 6- and 8-bit quality is slight at 300 dpi, but 8-bit scanners dazzle as resolution increases.

Users interested only in OCR may want to look elsewhere, but desktop publishers and those who need scanners for image data bases or fax input should seriously consider these products. Although the systems are designed for typeset output, graphics professionals should weigh the factors of quality, cost, and versatility before buying. Traditional photochemical halftoning usually offers higher quality at a lower cost, but many graphics professionals will find the convenience and flexibility of creating digital halftones on a gray-scale scanner worth the trade-offs (see the sidebar "Digital Versus Photochemical Halftoning: Which Way to Go?").

Scanner Buying Criteria

Image quality is paramount in evaluating gray-scale scanning systems. *PC World* used default scanning settings to output scanned photos on a variety of printing devices, ranging from 300-dpi laser printers to typesetters. The ultimate challenge was scanning a high-contrast photo with dark gray levels and then printing it on a 2400-dpi Agfa Compugraphic (see **FIGURE 1**). The results generally indicate that the greater the number of gray scales supported, the better the image quality. Other factors also come into play, however, such as the resolution level and the line frequency of the halftone screen (see the sidebar "Secrets of Gray-Scale Image Quality").

Scanning options are next in importance. In addition to scanning at 300 dpi, a system should be able to scan at lower resolutions and with fewer gray scales for proofing. This saves disk space and reduces printing and scanning time. The ability to scale (reduce or enlarge) and frame part of an image while scanning also saves time and disk space. Other features to consider include brightness and contrast controls for improving poorly photographed images, and extras such as image flipping and reversing.

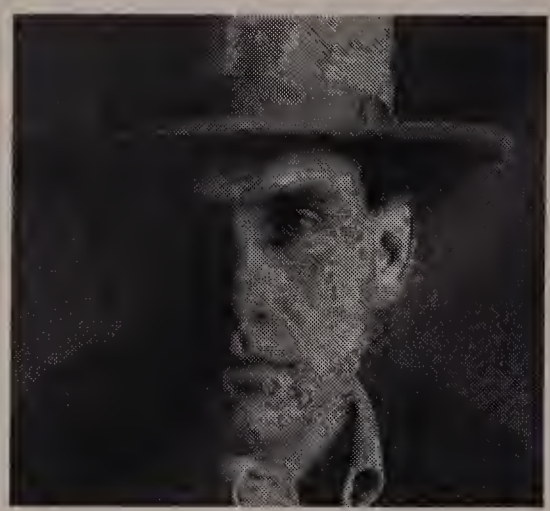
Equally critical for most users are image editing features—software tools for manipulating photos after they've been scanned. Here you see the greatest variations between the systems. HP's *Scanning Gallery Plus* software provides sparse editing tools, and Datacopy's *PC Image* is even more lim-

The Microtek MSF-300G is the Best Buy of the scanning systems reviewed. Despite its low $2195 price, it delivers superb image quality and sophisticated gray-scale editing features.

PIERRE-YVES GOAVEC

FIGURE 1

At High Resolution, Microtek's MSF-300G Grabs the Grays



Datacopy 730 GS (64 grays)

Hewlett-Packard ScanJet Plus (256 grays)

IBM PageScanner Model 3119 (128 grays)

Microtek MSF-300G (256 grays)

Microtek MSF-400G (256 grays)

Commercial photo halftone

These gray-scale (TIFF) images were printed on a 2400-dpi Agfa Compugraphic phototypesetter, using PageMaker to control the halftoning process with a dot screen pattern at a 45-degree angle. All the test photos were screened at 133 lines per inch except for the Datacopy photo, which was set at an optimal 90 lpi (the 133-dpi versions displayed poor shadow detail).

Each image was captured using the scanners' default settings—none of the enhanced (interpolated) resolutions or gray-scale editing tools available were exploited. By experimenting with contrast and brightness controls and by applying gray-scale editing tools, you might improve the quality.

The test challenges the scanning systems with a high-contrast photo halftoned at a high resolution and line frequency. In more informal tests, the differences in quality were less marked when using lower-contrast photos shot at lower resolutions, but the relative rankings in quality were similar.

The Microtek MSF-300G is the Best Buy of the scanning systems reviewed. Despite its low $2195 price, it delivers superb image quality and sophisticated gray-scale editing.

Hewlett-Packard's easy-to-use ScanJet Plus is a good choice for beginners. Image editing tools are limited, but if your photo's right to begin with, you can generate magazine-quality halftones with 256 gray levels.

ited. *Scanning Gallery Plus* lets you cut, copy, paste, and crop a gray-scale image after scanning, and *PC Image* lets you resize, but neither provides tools for retouching photos or creating special effects.

In contrast, Astral Corporation's *Picture Publisher* (bundled with the Microtek scanners) and IBM's *ImagEdit* provide sophisticated gray-scale editing features once available only on the Macintosh. Designed for polishing high-resolution output, both products let you view the actual grays on a VGA display. You can modify brightness and contrast after scanning and manipulate gray levels, either globally or locally. For example, you can lighten darker grays to render more detail, or soften or sharpen the focus by changing the tonal range. The programs offer gray-scale painting tools and allow you to

cut and paste between photos to create composite images. *Picture Publisher* even provides airbrushing and texturing effects.

Less important for the purposes of this review are line-art editing features—fat-bit pixel editors used for cleaning up errant "garbage" around solid-tone line art. Only the HP scanner lacks this feature, but all these systems except the IBM scanner let you save files in .PCX format so you can send line-art images to a paint program such as *PC Paintbrush* for pixel editing.

All the systems support PostScript and PCL (LaserJet-compatible) printers, and all can output files in Tagged Image File Format (TIFF) so that you can send images to page-layout programs. All but the Datacopy scanner support Encapsulated PostScript Format (EPS). With an EPS file, you can use DOS to send your image directly to a PostScript printer or typesetter—you don't need a page layout program. IBM's *ImagEdit* even lets you assign halftone settings within the program and save them in an EPS file so that you can control the typesetter remotely. In contrast, HP and Microtek users must accept the halftoning defaults of the output device or set them in a page layout program.

Speed on all the systems is about the same —slow. And the higher the resolution and number of gray levels, the slower the scan. Ease of use varies between the systems. All the hardware components are easy enough to install and use, but software usability varies. Because gray-scale retouching requires extensive training no matter how intuitive the interface, ease of use is given less weight than in the usual *PC World* review. Still, it can be a factor, and the following reviews evaluate the user interface of each system to help you make your buying decision.

Datacopy Model 730GS

If you usually output your publications on laser printers, Datacopy's $1995 Model 730GS may fill the bill. Because it's a 6-bit system, however, it's not optimal for producing scanned photos on a high-resolution typesetter. Image quality is comparatively poor, and the editing tools are the weakest in the roundup.

Considering that it captures only 64 gray levels, it's no surprise the 730GS was hamstrung by the challenging test photo in **FIGURE 1**. Image quality is poor at the 133-lines-per-inch (lpi) setting used with the other systems; only after dropping down to a coarser 90 lpi was the 730GS image accetable, and even then its quality was inferior to that of its rivals. However, with a fully lit medium- or low-contrast photograph, the 730GS produces acceptable business-quality halftones.

Datacopy's system includes its *PC Image* software, which provides good scanning controls but scant editing features. Its *Windows* interface is relatively easy to use, but there's no on-line help. *PC Image* can't display true gray scales on screen, but dithering options show a crude emulation of halftone styles. (See the sidebar "Secrets of Gray-Scale Image Quality" for more information on dithering and other scanning options.)

Although rated at 300 dpi, the Model 730GS can approximate 450-dpi resolution by using interpolation, a technique that sometimes smoothes transitions between grays. You can also select low-resolution and 4-bit options for quick proofs.

PC Image's biggest drawback is its lack of gray-scale editing tools. It provides a pixel editor for line art, but with photos, you're limited to resizing. *PC Image* supplies a bat-

IBM's ImagEdit lets you assign halftone settings within the program.

EXECUTIVE SUMMARY

Datacopy Model 730GS

Gray-scale scanning system

The Datacopy Madel 730GS is a solid value if yau print mastly on laser printers, but its 6-bit, 64-gray-level aperatian limits the quality of high-resolutian output, and its editing taals are rudimentary.

	POOR	FAIR	GOOD	EXCELLENT	
Scanning options				●	
Image editing		●			
Printing options			●		
Image quality			●		
Overall value			●		

Reader service no. 656

SECRETS OF GRAY-SCALE IMAGE QUALITY

The quality of a gray-scale photo depends primarily on the resolution of the output device and the scanner's resolution and number of gray levels. Although it's often a matter of taste, the range of gray scales is usually more important than resolution. For most business applications, 300-dpi scanned images coupled with 64 to 256 gray levels will do the job.

Many other factors affect image quality. Most important is the condition of the original photo, including contrast, focus, and range of gray tones. No amount of tinkering can fix a grossly flawed original. Also key are the settings you use to scan the image, the adjustments you make with image-editing tools after scanning, and the halftone screen you select. In turn, the halftone screen should jibe with the texture of paper you'll use. Other variables may be beyond your control: An image can go sour if the typesetting operator lacks the expertise to optimize for digital halftoning.

Here are some factors to keep in mind:

Resolution A scanner's resolution is tied to the number of dots per inch (dpi) the scanner reads. Most scanners are rated at 300 dpi, but a few 400-dpi units are available, and 600 dpi is on the way.

The higher the resolution of a scanned photo and the closer it approaches the resolution of the output device, the better the image quality. For example, the top quality of an image scanned at 400 dpi isn't perceptible when the photo is printed on a 300-dpi laser printer, but it becomes noticeable when printed on a 400- or 600-dpi laser printer and is even more evident on a phototypesetter set at 1200 or 2540 dpi.

Interpolation Some scanners emulate resolutions above 300 dpi using interpolation, a gray-scale averaging technique that adds new values between existing ones during scanning. Though the true resolution is still 300 dpi, interpolation sometimes produces smoother transitions between grays on high-resolution output devices. Interpolation doesn't always match the apparent resolution it attempts to emulate, and with some photos it won't improve the quality at all. Successful use requires experimentation with different resolution levels and other variables.

The tonal quality of a dithered image is often poor, especially beyond 300 dpi.

Dithering The number of grays a scanner captures is determined by how many data bits the scanner assigns to each pixel. Non-gray-scale scanners capture only 1 bit per pixel: on (black) or off (white). You can simulate shades of gray with dithering (fixed halftone patterns of black and white dots), but the tonal quality of a dithered image is often poor, especially beyond 300 dpi. Also, resizing creates interference patterns, rendering the image useless.

Gray Scales Gray-scale scanners, on the other hand, provide greater image quality by using 4, 6, or 8 bits to store different values of gray for each pixel. The halftone pattern isn't applied until after the scan, so you can choose the best screen for the printer's resolution and resize the image without distortion.

On a high-resolution typesetter, an 8-bit image with 256 grays renders the broadest range of continuous tones. A 4-bit image is unacceptable at high resolutions, but an 8-bit image with 128 grays or, to a lesser extent, a 6-bit image with 64 grays can still produce a decent halftone, depending on the photo and screen. Differences between 6- and 8-bit images are pronounced at 1200 and 2540 dpi but slight at 300 dpi.

Halftone Screen Choosing the right combination of halftone screen variables—a halftone pattern, an angle, and a line-screen frequency—is paramount. Usually you'll do this in a page makeup program, such as *PageMaker* or *Ventura*.

The line-screen frequency, expressed in lines per inch (lpi), is usually the key factor. Generally, with a higher lpi, the apparent resolution improves; with a lower lpi, you get more shades of gray. Magazines and books typically use a 120- to 150-lpi screen; newspapers use coarser 65- to 85-lpi screens.

The best-looking images from a 300-dpi laser printer are usually produced at a 50-lpi screen setting. With some laser printers, you can boost both the number of grays and the resolution by installing an enhancement board such as DP-Tek's LaserPort. With a typesetter, you can use an even higher lpi and still obtain a large number of grays.

With all these variables, it's not surprising that perfecting gray-scale images often requires numerous proofs. Still, experience will gradually put you on track. —*R. J.*

tery of dithering options with 7 preset scanning patterns and even more postscanning patterns, but the usefulness of dithering is usually limited to 300-dpi output. Other print options are weak, and it's the only program that can't save a gray-scale image as an EPS file.

Datacopy also sells a Model 830 6-bit system designed for OCR tasks. The $3495 system is not recommended for gray-scale imaging.

All told, the Datacopy 730GS can't match its 8-bit rivals at creating gray-scale halftones. It may do the job for laser printer users, but it's only a fair deal for typeset output.

Hewlett-Packard ScanJet Plus

The easiest system to use in the roundup, Hewlett-Packard's sleek, $2190 ScanJet Plus produces magazine-quality halftones with 256 grays. *Scanning Gallery Plus*'s scanning tools are capable, but its image-editing skills are only slightly better than those of Datacopy's *PC Image*. Still, the ScanJet Plus is a good entry-level system.

The ScanJet Plus provides sharp resolution and contrast, but its default settings produced a slightly darker image than the other 256-gray-level scanners. If you don't mind a softer image, you can adjust the brightness and contrast settings for more shadow detail.

HP's *Scanning Gallery Plus* software is easy to use, and on-line help is excellent. The user guide includes valuable tips for *PageMaker* and *Ventura* users. Separate windows are provided for scanning and image editing, and scanning controls are conveniently clustered in the same dialog box. However, you can't display gray-scale images accurately.

Scanning options are better than most. Using interpolation you can approximate resolutions up to 1500 dpi or choose lower resolutions and a 4-bit mode to output rough drafts quickly. Print options are also good: You can print a selected part of an image and output multiple copies.

Image editing is limited, unfortunately. Unlike *PC Image*, *Scanning Gallery Plus* lets you cut and crop gray-scale images, and copy and paste sections together to create a crude composite. However, you can't manipulate gray levels after scanning, and you don't have gray-scale paint tools or a line-art pixel editor.

For those who need an easy-to-use scanning system that can output high-quality images, the ScanJet Plus is made to order. If you want advanced tools, you can buy version 1.2 of Astral's $595 *Picture Publisher* (due this fall), which will include a ScanJet

Hewlett-Packard's easy-to-use ScanJet Plus is a good choice for beginners. Image editing tools are limited, but if your photo's right to begin with, you can generate magazine-quality halftones with 256 gray levels.

PIERRE-YVES GOAVEC

EXECUTIVE SUMMARY

Hewlett-Packard ScanJet Plus

Gray-scale scanning system

The 8-bit ScanJet Plus delivers with a law price, easy operatian, and first-rate autput at 256 gray levels. The image editing saftware is fairly primitive, but the system is a good value for publishing novices.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options			●	
Image editing		●		
Printing options			●	
Image quality			●	
Overall value			●	

Reader service no. 657

FEATURES EVALUATION

First-Rate Image Editors From IBM and Microtek

The Microtek and IBM scanning systems offer gray-scale image editing features far superior to the HP's or the Datacopy's.

● Yes
○ No

	Datacopy 730GS	HP ScanJet Plus	IBM Page Scanner Model 3119	Microtek MSF-300G	Microtek MSF-400G
Scanning options					
Maximum scan size	8.5x11	8.5x11	8.5x11	8.5x14	8.5x14
Gray levels	64	256	128	256	256
Bits per pixel	6/4	8/4	8	8	8
Highest resolution (in dpi)	450[1]	1500[1]	300	300	400
Lowest resolution (in dpi)	60	12	60	3	4
Dithering patterns	7/16[2]	4	4	12	12
Custom resolution	○	●	○	●	●
Scaling during scanning	○	●	●	●	●
Brightness/contrast control	●	●	●	○	○
Gray-scale distribution control	○	○	●	○	○
Flip image	●	●	●	○	○
Reverse image	●	●	○	○	○
Image editing (postscan)					
Displays actual gray scales	○	○	●	●	●
Brightness/contrast controls	○	○	●	●	●
Gray-scale distribution control	○	○	●	●	●
Flip/rotate image	○	○	●	●	●
Cut/copy/paste/crop image	○	●	●	●	●
Cut/paste irregular shapes	○	○	○	●	●
Undo command	○	●	●	●	●
Gray-scale retouching	○	○	●	●	●
Airbrushing	○	○	○	●	●
Pixel editor for line art	●	○	●	●	●
Printing options					
Halftone screen controls	○	○	●	○	○
Scaling for printing	○	○	●	●	●
Print selected area	○	●	○	●	●
Print multiple copies	○	●	●	○	○
TIFF support	●	●	●	●	●
EPSF support	○	●	●	●	●
.PCX support	●	●	○	●	●

[1] Resolution beyond 300 dpi is by interpolation, not true optical resolution.
[2] Seven of the 16 postscan patterns duplicate the 7 prescan patterns.

driver. Or, for $5 more than the ScanJet, you could buy the Microtek MSF-300G, which offers slightly better image quality and gives you *Picture Publisher* for free.

IBM PageScanner Model 3119

The star attraction of IBM's PageScanner is *ImagEdit*, an excellent image editor that lets you set halftone screens within the program. The 8-bit PageScanner reads 256 gray levels but saves only 128 grays. Still, its output almost matches the image quality of 256-gray-level scanners. Unfortunately, the PageScanner is available for Micro Channel systems only, and the price is a steep $3840. Also, because the glass platen moves over the scanning mechanism instead of vice versa, it's difficult to scan thick books, which must be pressed against the glass. Despite these flaws, *ImagEdit* makes the PageScanner a good deal for users of Micro Channel–based systems.

Surprisingly, the PageScanner's output on the 2400-dpi test image came close to the quality of the 256-level ScanJet, though it couldn't match the Microtek scanners. Its default settings produced a softer image with lighter tones, but you could use *ImagEdit* to adjust the gray-level distribution and produce a better image.

Though not quite as powerful as *Picture Publisher*, *ImagEdit* is easier to use, thanks to its excellent on-line help and faithfulness to the *Windows* interface. It accurately displays gray scales on a VGA or an 8514 monitor.

ImagEdit's top-notch scanning options are

EXECUTIVE SUMMARY

IBM PageScanner Model 3119

Gray-scale scanning system

Although IBM's 8-bit PageScanner works only with Micro Channel machines, costs a bundle, and is hamstrung by its moving glass platen, the excellent *ImagEdit* software makes it a good deal.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options				●
Image editing			●	
Printing options				●
Image quality			●	
Overall value			●	

Reader service no. 658

VGAWONDER

WORLD
1989
ORLD CLASS
AWARD

C
AZINE
TORS'
OICE
1989
ONDER

ERLD
BUY

Fabulous Offer

VGA*WONDER* Bundle Includes HARVARD™ Graphics

HARVARD™

for an additional
$150.00*

While quantities last.
*M.S.L. $495.00

FASTER THAN THE AVERAGE BEAR

Are you asking yourself what a bear has to do with super speed, remarkable resolution and fabulous colors? We did, too. How can anyone bear to work with less than incredible speed, we asked ourselves. How can anyone bear to work without extraordinary resolution? Bear to work with less than 256 spectacular colors? We got so beared out, we decided to share one with you. Along with the bear facts about ATI's award-winning board.

Such as:

- high resolution 800×600 and 1024×768 graphics
- fast 16-bit bus support
- 100% register-level compatible in VGA®, EGA®, CGA®, MDA®, and Hercules® modes
- analog and digital monitor support
- easy, switchless installation
- high resolution and 132 column drivers
- Microsoft® compatible bus mouse and mouse port included
- available in 256K and 512K versions

Oh, and bear this in mind – when it comes to VGA*WONDER*®, you'll be getting a honey of a price!

See us at Booth H8224
COMDEX/Fall '89
November 13–17, 1989
Las Vegas Hilton Hotel
Las Vegas, Nevada

For more information, contact your supplier or

ATI Technologies Inc.
3761 Victoria Park Avenue
Scarborough, Ontario
Canada M1W 3S2
Tel: (416) 756-0718
Fax: (416) 756-0720

ATI® TECHNOLOGIES INC.
Technology you can Trust.

Registered trademarks are as follows: ATI, VGA*WONDER* – ATI Technologies Inc.; Microsoft – Microsoft Corp.; Hercules – Hercules Computer Technologies Inc.; VGA, EGA, CGA, MDA – International Business Machines Corp.

Circle 302 on reader service card

Create reports like these quickly, and without programming.

R&R helps you create reports like these quickly, without programming, directly from dBASE and Lotus databases. Develop reports for turnkey systems. Prepare ad hoc and custom reports. Print in any layout, from columnar listings and mailing labels to preprinted forms and form letters.

Lotus-like menus, WYSIWYG screen-painting, and HELP system make it easy to learn R&R. Perform calculations as needed, including subtotals and totals. Sort and group records in any order. Select records with plain-English query. Save time with automatic TRIM, word-wrap, justification, currency, and date formats. Improve appearance with bold, *italics*, underline, different fonts, and lines and boxes.

R&R is full-featured and flexible, so you can concentrate on making your reports show exactly what you want to show, the way you want to show it.

R&R Relational Report Writer

Works with dBASE III, dBASE IV, Clipper®, FoxBASE+™, dBXL™, Quicksilver™, and file-compatibles. Includes royalty-free runtime that requires only 25 KB of memory. Network support standard. Clipper and FoxBASE+ Module required for .NTX and .IDX indexes, $49.95. Optional Code Generator, $149, translates R&R reports into dBASE programs in just seconds.

For dBASE III® and dBASE IV™. $149

PC MAGAZINE — EDITOR'S CHOICE — R&R Relational Report Writer, V2.0 — December 8, 1987

"... a stunning combination of a comfortable and informative user interface, supremely easy access to multiple related files, and extensive report design and enhancement tools. Usable by novice and expert alike, it is superb for generating either straightforward or complex report output...."

Awarded *Most Useful Add-On Product for dBASE* by 1988 dBASE Developer Conference attendees. Ashton-Tate, September 1988.

R&R Worksheet Report Writer

INFO WORLD EXCELLENT VALUE 5/22/89

Works with Lotus database worksheets. Use as add-in or add-on with 1-2-3 (2.01 and 2.2), Symphony, and worksheet-compatible products. Requires 20KB as add-in. Network support standard. Replaces Lotus 1-2-3 Report Writer™, and includes program to convert existing reports to R&R.

For Lotus® 1-2-3® and Symphony®. $149

Sales Registers
Invoices
Form Letters
Statements
Mailing Labels
Aged Receivables
COD Tags
Purchase Orders
Customer Lists
Telephone Directories
Sales Analyses
Advertising Schedules
and more

NEW! Code Generator for Clipper, dBASE IV, dBXL, FoxBASE+, and Quicksilver.

30-Day Moneyback Guarantee!

To order, or for more information and the name of the dealer nearest you, call:

800-325-9035

in Mass., call 508-366-1122.

Concentric Data Systems, Inc.
18 Lyman Street, Westboro, MA 01581

Circle 181 on reader service card

somewhat better than *Picture Publisher*'s, offering such extras as image flipping. One unique feature even lets you apply a user-defined gray-scale distribution curve during scanning to alter highlights and shadows or create special effects.

Image-editing features are quite advanced but don't match *Picture Publisher*'s. Both include numerous editing and paint tools for altering gray-scale images after scanning. However, *ImagEdit* lacks *Picture Publisher*'s sophisticated airbrushing and texturing tools, and it can't cut and paste irregular shapes. A pixel editor is included for line art.

The PageScanner is the only system reviewed that lets you control the halftone screen. You can pick the screen pattern, angle, and line-screen frequency and send the image directly to a PostScript printer as an EPS file.

IBM's scanning system is a good deal for graphics pros who want to bypass page makeup and transmit digital halftones directly. Despite its high price, many Micro

DIGITAL VERSUS PHOTOCHEMICAL HALFTONING: WHICH WAY TO GO?

Do you really need a gray-scale scanner system? First, consider the alternatives. Two of the most common methods for publishing continuous-tone images are the photoprint and the halftone; both are line-art versions of continuous-tone images. To create them, a photo is rephotographed through a fine mesh or screen that converts photographic tones into a pattern of dots or lines. Our eyes and brain blend the patterns to perceive gray.

With a photoprint positive, you paste the image onto a camera-ready page and rephotograph it along with text and line art to produce the film used to produce the printing plate. A halftone negative, on the other hand, can be stripped directly onto the film, saving you a reproduction step and producing a better-quality image.

Why choose such traditional techniques? Photochemical halftoning usually provides a higher-quality image than digital halftoning with a scanning system. And although it requires a graphic arts camera and photochemical processing, making it prohibitively expensive for most companies to bring in-house, it's generally cheaper than digital halftoning when done through a commercial service.

Most services charge a flat rate of about $30 for each photochemical print, no matter how many proofs they have to run to get it right. In comparison, a digital halftone on the same typesetter costs about $20 per page for final output, and most users will also want a $10 paper positive for proofing. So far, the cost is about the same, but digital halftones rarely come out perfectly the first time. You frequently need to order one or more paper proofs, each at a separate charge, and then an additional final negative. So a digital halftone is likely to cost twice as much as a conventional halftone, and that doesn't include the original cost of the scanning system.

However, digital halftoning offers some striking advantages in convenience, security, and flexibility, and some of these benefits translate into lower costs. With a commercial service, generating and stripping photochemical halftones can take hours or even days. With digital halftoning, on the other hand, you can send a gray-scale image already integrated with text and line art directly to a typesetter. If you use a modem, you can reduce delivery charges. This direct access also keeps confidential documents safe from prying eyes.

Yet the greatest benefit of digital halftoning is the control you gain over image production. If you often require special effects, the cost of training an employee to use gray-scale editing tools can pay off. Instead of paying a photo lab to retouch or alter a photo in the darkroom, the office scanning expert can quickly retouch the photo on a PC, saving time and lab charges. You can also create unusual images—say, the company CEO standing on the moon—that are too difficult or expensive to accomplish in a lab. Collages are especially cost-effective.

If you don't require innovative effects and you don't need a scanner for another purpose, stick with traditional halftones. But if you want more control over image production, digital halftoning is the way to go. —*R. J.*

Channel users will find it's worth the cost. But take note: The other vendors also offer Micro Channel versions.

Microtek MSF-300G and MSF-400G

Microtek's $2195 MSF-300G and top-of-the-line $3995 MSF-400G are the class acts of the roundup. Except for the MSF-400G's higher price and 400-dpi resolution, the systems are identical. Both scanners are 8-bit models that let you scan an image as large as 8½ by 14 inches, and both bundle the superb *Picture Publisher* editing software. Graphics professionals may covet the MSF-400G's resolution, but at $1800 less, the MSF-300G is the roundup's Best Buy.

Surprisingly, the Microtek MSF-300G produced slightly better output than the 400-dpi MSF-400G. It displayed the most easily distinguishable range of grays of the roundup, with good resolution, highlights, and shadow detail. The MSF-400G came in a close second, offering the sharpest resolution of the roundup, but it showed fewer shadow highlights. Still, some will prefer the MSF-400G's sharper image quality, even though the higher resolution creates mammoth disk files.

Picture Publisher improves image quality even further—but don't expect to master it overnight. The program provides two screens, one for scanning, managing, and printing images, and the other for editing. The scanning screen is fairly easy to deal with, drawing on *Windows* conventions, but the editing screen adopts a separate, less intuitive interface. It accurately displays gray levels, but it's hard to use. You pick editing modes from lists and select additional controls via function keys, but the function-key assignments change from mode to mode. And there's no keyboard template or on-line help to assist.

Picture Publisher's scanning controls are good, but they don't equal *ImagEdit*'s. Although you can save frame settings for reuse, you can't control contrast and brightness settings or flip an image until after scanning.

When it comes to image editing, though, *Picture Publisher* has no equal. Whereas *ImagEdit* limits you to rectangular cut and paste, *Picture Publisher* also supports irreg-

EXECUTIVE SUMMARY

Microtek MSF-300G

Gray-scale scanning system

The 8-bit MSF-300G scanner not only provides the best image quality in the roundup but also tosses in the superb *Picture Publisher* gray-scale editor to polish its images. A bargain price makes it the Best Buy for most desktop publishers.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options			●	
Image editing				●
Printing options			●	
Image quality				●
Overall value				●

Reader service no. 659

MICROTEK'S NEW COLOR SCANNER—ONLY $2595

At press time, Microtek announced the MSF-300Z, a 300-dpi color/gray-scale scanning system. At $2595, it's a bargain compared with similar color/gray-scale scanners such as the $4570 Sharp JX-300 Color Scanner.

The MSF-300Z, which should be available by the time you read this, is almost identical to this roundup's Best Buy, the MSF-300G, and will add a 24-bit color scanning capability that can record 256 colors from a possible 16.8 million–color palette. The price will include an 8-bit 256-gray mode, *Picture Publisher* and *EyeStar Plus* software, and a new color editing package.

Designed for scanning color photos and outputting them on ink jet, color dot matrix, and color laser printers, the scanner will be used primarily to proof color before high-resolution color separations are produced. The MSF-300Z uses three 8-bit scanning passes on each image, collecting 24 bits of color data.

If you're thinking of putting an IBM monitor on your PS/2, you're not seeing the big picture.

When it comes to displays, bigger is better. That's one reason why the Amdek Monitor/432 monochrome VGA has a big edge over IBM's own standard PS/2 monitor.

But it's not the only reason. Because the 432 is, after all, from Amdek. A company with over 12 years experience in the computer monitor business, and the leading independent monochrome supplier.*

The 432's 14" etched-surface, flat screen produces hardly any glare or distortion. And far less eyestrain than Big Blue's PS/2 monitor with its smaller, 12" curved screen.

What's more, IBM's smaller screen also carries a bigger price tag.

So, if you're choosing a monochrome monitor for a PS/2 or any AT compatible, remember the company that hasn't lost sight of the big picture. Amdek. For the dealer nearest you, call 1-800-PC AMDEK.

AMDEK

Amdek is a registered trademark of Amdek Corporation. Other trademarks/owners: PS/2, VGA, IBM/International Business Machines. *1989 Stanford Resources, Inc.

Circle 29 on reader service card

When it comes to image editing, Picture Publisher has no equal.

EXECUTIVE SUMMARY

Microtek MSF-400G

Gray-scale scanning system

Graphic arts professionals looking far sharp, high-resalutian autput will appreciate Micratek's 8-bit MSF-400G, the anly 400-dpi scanner in the raundup. The excellent *Picture Publisher* saftware makes the high price warthwhile.

	POOR	FAIR	GOOD	EXCELLENT
Scanning options			●	
Image editing				●
Printing options			●	
Image quality				●
Overall value			●	

Reader service no. 659

ular shapes. Both programs provide a paint tool for removing flaws, but *Picture Publisher* also supplies tools for smoothing, sharpening, and airbrushing parts of an image and applying various textures. A separate *EyeStar Plus* program competently handles line-art pixel editing.

With its low price, superb image quality, and excellent editing tools, the MSF-300G is a winner. The MSF-400G may appeal to some high-end users, but the 300G is the Best Buy.

Gravitating Toward Gray

If you want to produce top-quality halftones on a high-resolution typesetter, invest in a scanner system that captures 256 gray levels and offers versatile scanning and editing tools. The Microtek MSF-300G fits this prescription perfectly and wins a Best Buy.

The higher-resolution Microtek MSF-400G is a good deal for graphics professionals, and HP's ScanJet Plus fills the bill for beginners. IBM's PageScanner has its flaws, but it's still a solid buy. Dropping down a notch, Datacopy's Model 730GS is a good match for laser printers but far less adequate for higher-resolution typesetters.

Only a short time ago, gray-scale scanners were an expensive luxury. Now that image editing tools have achieved sophistication, they're more attractive than ever as an alternative to traditional halftoning. And if you also use them for fax, image retrieval, or OCR tasks, they can really pay off. ●

Contributing Editor Richard Jantz is the author of Ventura Publisher 2.0: Mastering Desktop Publishing *(John Wiley & Sons, New York, 1989).*

For more information about all products in this article, circle reader service no. 912.

WHERE TO BUY

Datacopy Model 730GS
Xerax Imaging Systems, Datacapy Praducts
1215 Terra Bella Ave.
Mauntain View, CA 94043
800/821-2898, 415/965-7900
LIST PRICE: $1995 (scanner $1300; PC Image, PC or Micra Channel adapter, cable $695)
REQUIREMENTS: 640K, DOS 2.1 ar later versian, Windows-campatible mause, graphics display; hard disk recammended
ACCESSORIES: OCR Plus $695
TECHNICAL SUPPORT: unlimited, tall-free number, M–F 8–5
OTHER SUPPORT: none
Reader service no. 656

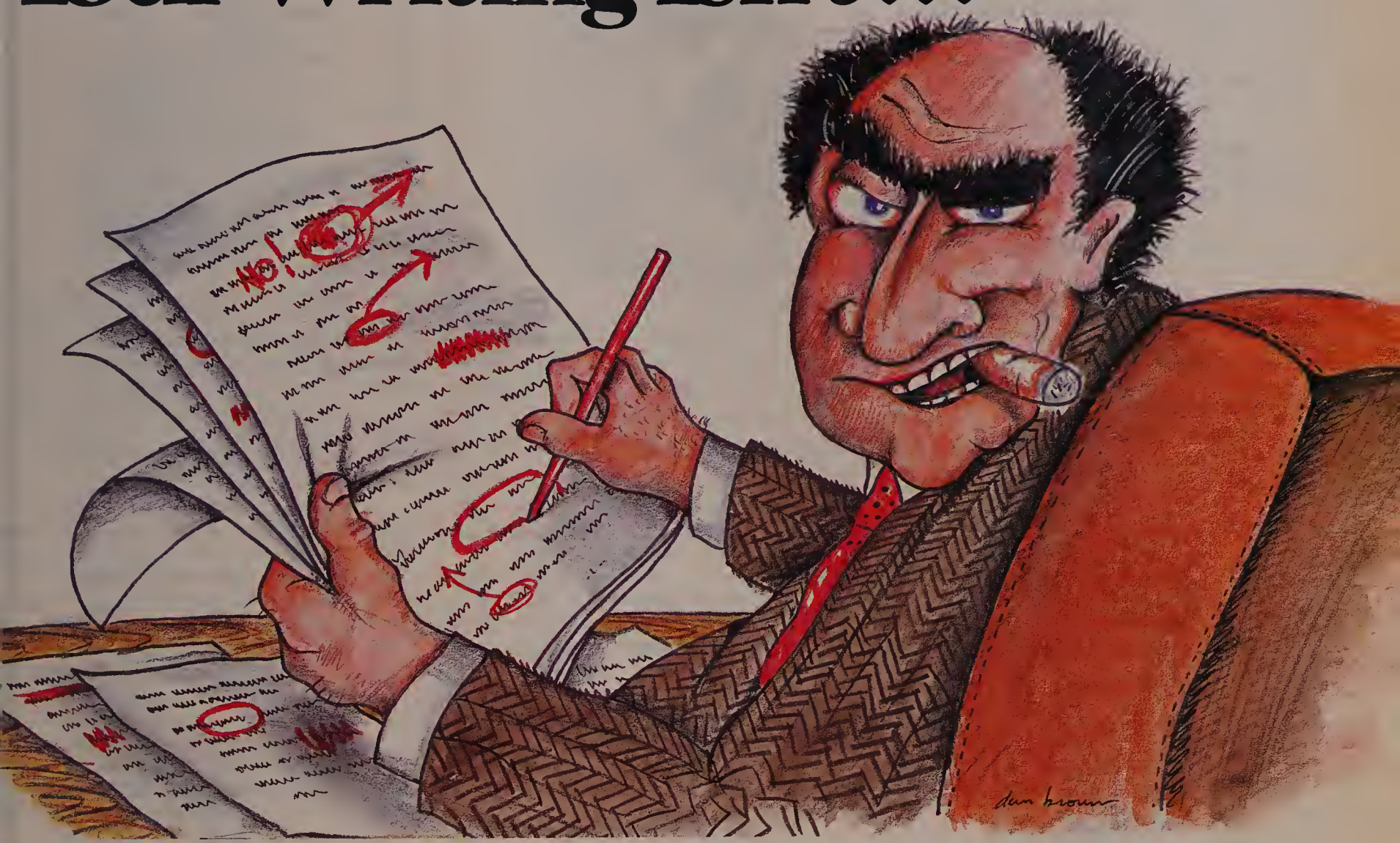
HP ScanJet Plus
Hewlett-Packard Custamer Informatian Center
19310 Pruneridge Ave.
Cupertina, CA 95014
800/752-0900
LIST PRICE: $2190 (scanner $1595; Scanning Gallery Plus, PC ar Micro Channel odapter, cable $595)
REQUIREMENTS: 640K, hard disk, DOS 2.1 ar later versian, Windaws-campatible mouse, graphics display
ACCESSORIES: TrueScan Madel S (OCR) by Calera Recagnitian Systems $2745, automatic dacument feeder $595, PS/2 Madel 30 adapter kit $68
TECHNICAL SUPPORT: unlimited, toll number, M–F 7–5
OTHER SUPPORT: none
Reader service no. 657

IBM PageScanner Model 3119
IBM Carp.
Old Orchard Park Rd.
Armank, NY 10573
800/447-4700, 914/934-4000
LIST PRICE: $3840 (scanner $2395, ImagEdit $495, Micro Channel adapter and cable $950)
REQUIREMENTS: 640K, Micro Channel slat, DOS 3.3 or later versian, Windows 2.0 ar later versian, Windaws-campatible mouse, VGA display
ACCESSORIES: TextReader (OCR) $595
TECHNICAL SUPPORT: supplied by dealer (BBS suppart avoilable far quantity purchases via lacal IBM branch)
OTHER SUPPORT: none
Reader service no. 658

Microtek MSF-300G, MSF-400G
Micratek Lab, Inc.
16901 S. Western Ave.
Gardena, CA 90247
800/654-4160, 213/321-2121
LIST PRICE: MSF-300G $2195, MSF-400G $3995; Picture Publisher, EyeStor Plus, PC or Micra Channel adapter, cable included with bath products
REQUIREMENTS: 640K, DOS 2.0 ar later versian, Windows-campatible mause, VGA display; hard disk recammended
ACCESSORIES: ReadRight (OCR) $595
TECHNICAL SUPPORT: unlimited, toll number, M–F 7:30–5:30
OTHER SUPPORT: extended support (free saftware upgrades, newsletter) $95 per year
Reader service no. 659

See Us At Comdex '89—Booth 2023—Main Hall

Your Ideas Are Great, Your Writing Isn't...



...Next Time, Use RightWriter!"

ghtWriter Now Includes More Than 4,500 Rules r Clear, Powerful Business Writing.

Good writing is good business. RightWriter 3.1 helps you produce ting that expresses your ideas with clarity—and impact.

Not a spell-checker, RightWriter is a sophisticated 'expert' system that cks for errors in grammar, style, usage and punctuation.

Version 3.1 Features.

- **Recommendations** are inserted directly into your text to point out problem areas.
- **Graphical Indexes** measure the strength, readability, and other overall qualities of your writing.
- **A New Menu System** allows you to change RightWriter to meet your particular needs.
- **Includes RightWords—FREE!** *(A $30 Value!)* Quickly customize RightWriter's vocabulary to fit your needs.
- **For use with IBM PC, XT, AT, PS/2 and compatibles.**

pports Leading Word Processors.

ightWriter supports all popular word processors and has a direct inter- with WordPerfect® 5.0. It is fully compatible with WordStar,® pfs: First oice,® MultiMate,® Microsoft Word® and many more.

l Us For Upgrade Information...

ISA, MasterCard and AMEX accepted. Add $4.50 for shipping and handling. Florida residents 6% sales tax. We offer a 30-day money-back guarantee on direct orders. International orders add $15.00.

pyright 1989, RightSoft, Inc. RightWriter is a registsred trademark of RightSoft, Inc. RightWriter is a RightSoft product.

Customize RightWriter's Rule Base.

Simply tell RightWriter which type of writing you'll be doing: business, technical, proposal, or fiction. RightWriter provides recommendations tailored to that particular style. Version 3.1 also lets you select exactly which rules RightWriter should use in its analysis of your documents.

Here's What The Experts Say...

"...a must buy for the businessman who writes memos all day. Highly recommended."
—John Dvorak

"CBG&H's editors loved RightWriter...it's a great guide for the businessperson, freelance writer and student...highly recommended."
—Computer Buyers Guide

"The manual is excellent."
—The New York Times

"...this is one of the easiest programs to install and use that I have ever seen."
—Andrew Seybold's Outlook on Professional Computing

Still Just $95

Contact your dealer or order direct.
Ask about upcoming Xenix version.

RightSoft, Inc.
4545 Samuel Street,
Sarasota, FL 34233-9912
(800) 992-0244
or (813) 923-0233
Fax: (813) 921-7849
Telex: 91-03509862

Circle 226 on reader service card

Need to accelerate

□ 3½″ format available from us. Specify when ordering.
⊡ package includes both 5¼″ and 3½″ disks.
R 3½″ format available from manufacturer by request. Call us for details.
CP—copy-protected; **NCP**—not copy-protected.

The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

SOFTWARE

We only carry the latest versions of products. Version numbers in our ads are current at press time.

Aldus ... NCP
1332 □PageMaker 3.0 ..... call
Alpha Software ... NCP
4103 ⊡AlphaWorks 1.0 ..... 109.
5104 ⊡ALPHA/four 1.0 ..... 319.

Great American Software ... NCP
□*One Write Plus Accounting System 2.0*—New! Includes the best-selling Master, Accounts Receivable, and Accounts Payable programs and offers easy set-up and operation . $179.

Application Techniques ... NCP
1214 ⊡Pizazz Plus 1.3 ..... 69.
Ashton-Tate ... NCP
4450 □dBASE IV 1.0 ..... call
1309 □MultiMate Advantage II 1.0 .... 299.
Autodesk ... NCP
4519 □Autosketch 2.0 ..... 89.
Bible Research ... NCP
1464 □The Word 4.2 *(KJV or NIV)* ..... 159.
Bloc Publishing ... NCP
4796 □Personal Lawyer 2.0 ..... 39.
4801 □PopDrop 3.1 ..... 32.
5414 □Fastpak Mail 4.0 ..... 49.
1447 □FormTool 2.01 ..... 55.
4594 □Form Filler 2.0 ..... 89.
Borland International ... NCP
1498 RTurbo C 2.0 ..... 99.
4330 RTurbo C Prof. Pack 1.0 ..... 169.
5335 RTurbo Pascal 5.5 ..... 99.
4332 RTurbo Pascal Prof. Pack 1.0 ..... 169.
4329 RTurbo Assembler & Debugger 1.0 99.

Generic Software ... NCP
R*Generic CADD Level 3 1.1*—Get professional results with Generic Software's Level 3. This easy-to-use yet sophisticated CAD package includes all the tools you'll need to create accurate and detailed drawings..... $169.

1521 RQuattro 1.0 ..... 165.
1514 ⊡Paradox 3.0 ..... call
Bourbaki ... NCP
4524 □1DIR+ 3.0 ..... 49.
Bridgeway Publishing ... NCP
4386 □FastTrax 3.9 ..... 35.
Brightbill-Roberts ... NCP
5408 □Hyperpad 1.0 ..... 89.
Broderbund ... CP
1434 □Print Shop 2.41 ..... 39.
1433 ⊡Memory Mate 3.01 *(NCP)* ..... 45.
Central Point ... NCP
5039 ⊡PC Tools Deluxe 5.5 *(new version)* 77.
5038 □Copy II PC 5.0 ..... 27.
Chronos Software ... NCP
4387 RWho•What•When 1.09 ..... 119.
Computer Associates ... NCP
4934 ⊡SuperCalc 5 1.0 ..... 319.
Corel Systems ... NCP
5506 □Corel Draw 1.1 ..... 329.
Crosstalk Communications ... NCP
2911 □Remote² 1.1 ..... 109.
2908 □Crosstalk XVI 3.7 ..... 109.
5611 □Crosstalk for Windows 1.0 ..... 129.
2909 □Crosstalk MK.4 1.1 ..... 139.
DacEasy ... NCP
3208 □Lightning 4.82 ..... 39.
1754 □Dac Easy Light 1.0 ..... 42.
1748 □Dac Easy Accounting 4.0 ..... 115.
3209 □Lucid 3-D 2.0 ..... 59.
Data Storm ... NCP
4798 ⊡PROCOMM PLUS 1.1 ..... 52.
Delrina Technology ... NCP
4325 ⊡PerFORM 2.0 ..... 169.
Digital Composition Systems ... NCP
5748 ⊡db Publisher 1.0 ..... 429.
5th Generation ... NCP
2762 □Mace Utilities 5.0 *(DOS utilities)* .. 59.
4688 □Mace Gold 1.0 ..... 89.
5504 ⊡Brooklyn Bridge 2.1 ..... 72.
3950 ⊡Fastback Plus 2.09 ..... 109.
FormWorx ... NCP
5808 □FormWorx 2.5 ..... 59.
5810 □FormWorx with Fill & File 2.5 .... 85.

Fox Software ... NCP
2233 RFoxbase Plus 2.1 *(single user)* . $199.
Foundation Ware ... NCP
5505 □Certus 1.0 *(vaccine)* ..... 99.
Funk Software ... NCP
2228 □Sideways 3.21 ..... 42.
2229 ⊡Worksheet Utilities 1.0 ..... 59.
4479 □Allways 1.0 ..... 85.
5157 ⊡Allways for Symphony 1.0 ..... 85.
General Information ... NCP
4118 RHot Line Two 2.1 ..... 49.
Generic Software ... NCP
2264 RBasic Home Design 3.0 ..... 35.
4344 RGeneric CADD Level 2 1.1 ..... 89.
4584 RCADD Starter Kit 1.0 *(incl. Level 2)* 109.
2265 RGeneric CADD Level 3 1.1 ..... 169.
Great American Software ... NCP
4880 □One Write Plus Accounting Sys. 2.0 .179.
4879 □One Write Plus Payroll 2.05 ..... 89.
5159 □One Write Plus Master Module 2.05 . 89.
5825 □Money Matters 1.0 ..... 55.
Harvard Associates ... NCP
2324 RPC Logo 3.0 ..... 59.
Hayes ... NCP
2293 ⊡Smartcom II 3.0 ..... 89.
2295 ⊡Smartcom III 1.0 ..... 149.
Hilgraeve Software ... NCP
2323 □HyperACCESS/5 ..... 115.
Individual Software ... NCP
2415 ⊡Typing Instructor Encore 2.13 .... 19.
2408 □Professor DOS 2.51 ..... 27.
Intuit ... NCP
2426 ⊡Quicken 3.0 ..... 39.
Javelin ... NCP
2526 RJavelin Plus 2.03 ..... 249.
Lord Publishing ... NCP
5191 ⊡Ronstadt's Financials 1.01 ..... 145.
Lotus ... NCP
5417 □1-2-3 3.0 ..... call
5653 □1-2-3 2.2 ..... call
5134 ⊡Magellan 1.0 ..... 149.
4131 ⊡Agenda 1.0 ..... 275.
2660 □Freelance Plus 3.0 ..... 345.
2667 □Symphony 2.0 ..... 459.

Corel Systems ... NCP
□*Corel Draw 1.1*—*PC Magazine* called it "A walloping good freehand drawing program that is easy to learn and fun to use. Highly recommended." ..... $329.

For IBM Personal Computers exclusively.

PC CONNECTION®

what you calculate?

Multisoft Corporation ... NCP
☐*PC-Kwik Power Pak 1.3*–A powerhouse of programs to tap the full capability of your PC. A Disk Accelerator, Print Spoolers, RAM Disks, Screen Accelerator and Keyboard Accelerator provide remarkable performance increases. $79.

MECA ... NCP
4529 ▣Checkwrite Plus 1.0 . . . . . 29.
2798 ☐Managing Your Money 6.0 . . . . . 119.

Microcom ... NCP
2775 ☐CarbonCopy Plus 5.1 *(2 req.)* . . . 115.
4651 ☐Relay Gold 3.0 . . . . . 149.

Micro Logic ... NCP
2968 ☐Tornado 1.8 . . . . . 55.

Microlytics ... NCP
2734 ☐WordFinder 4.0 . . . . . 39.
2731 ☐GOfer 2.0 *(new version)* . . . . . 45.

Microrim ... NCP
2835 ▣R:BASE for DOS *(version 2.1)*. . . 489.
5008 ▣R:BASE Compiler 1.0 . . . . . 629.

Microsoft ... NCP
2860 ☐Learning DOS 2.0 . . . . . 35.
2899 ☐Windows 286 2.1 . . . . . 69.
2904 ☐Works 2.0 . . . . . .99.
2900 ▣Windows 386 2.1 . . . . . 129.
2890 ▣Multiplan 4.01 . . . . . 135.
2901 ☐Word 5.0 . . . . . 209.
2903 Word 5.0 Network Add. Stations . . 135.
2856 ▣Excel 2.1 *(req. 80286/80386)* . . . call
2857 Excel 2.1 Network Add. Stations . . 175.
2891 ▣Project 4.0 . . . . . 329.
LANGUAGES
5188 ☐QuickPascal 1.0 . . . . . 69.
2894 ☐QuickBASIC 4.5. . . . . 69.
2895 ☐QuickC 2.0 . . . . . 69.
5410 ☐QuickC 2.01 w/Assembler . . . . . 139.
2880 ▣Macro Assembler 5.1. . . . . 99.
2847 ▣Basic Compiler 6.0 . . . . . 199.
2859 ▣Fortran Compiler 5.0 . . . . . 289.
2853 ▣C Compiler 5.1 . . . . . 299.

Monogram ... NCP
2778 ▣Dollars and Sense 3.1 . . . . . 105.

Multisoft ... NCP
4924 ☐Super PC-Kwik 3.3 . . . . . 49.
4925 ☐PC-Kwik Power Pak 1.3 . . . . . 79.

Nantucket Software ... NCP
2970 ▣Clipper *(Summer '87)* . . . . . 429.

New England Software ... NCP
3004 ▣Graph-in-the-Box 2.2 . . . . . 75.
4337 ☐GB-Stat 1.5 . . . . . 159.

Nolo Press ... NCP
2982 ☐WillMaker 3.0. . . . . $35.
5122 ☐For The Record 1.0 . . . . . 35.

North Edge Software ... NCP
2987 ☐Timeslips III 3.4 . . . . . 169.

Norton-Lambert ... NCP
4928 ☐Close-Up Customer 3.0 . . . . . 135.
4929 ☐Close-Up Support 3.0 . . . . . 165.
5420 ▣Close-Up LAN *(8 user)*. . . . . 529.

On Track Computer Sys. ... NCP
5490 ▣Disk Manager 4.0 . . . . . 65.

Owl International ... NCP
3080 ☐Guide 2.0. . . . . 143.

Paperback Software ... NCP
3142 ☐VP-Planner Plus 2.0 . . . . . 145.
3138 ☐VP-Expert 2.1 . . . . . 145.

Personics ... NCP
3126 ▣SeeMORE 2.0 . . . . . 54.
4328 ▣Look & Link 1.1 . . . . . 59.
4384 ☐Ultravision 1.2 . . . . . 79.

Peter Norton ... NCP
3152 ▣Norton Commander 2.0. . . . . 52.
3146 ▣Advanced Utilities 4.5 . . . . . 89.
3153 ▣Norton Editor 1.3 . . . . . 45.
4150 ▣Dan Bricklin's Demo Prog. 2 2B . .109.

Quarterdeck ... NCP
3221 ☐Expanded Memory Mgr. 386 5.0 . 59.
3220 ☐DESQView 2.26. . . . . 79.
4586 ☐DESQView 386 . . . . . 129.

Reference Software ... NCP
4396 ▣Grammatik IV 1.0. . . . . 52.

Revolution Software ... NCP
4480 ▣VGA Dimmer 2.01 *(screen saver)* . 19.
3254 ▣Cruise Control 3.02 . . . . . 39.

Rightsoft ... NCP
4155 ▣Rightwriter 3.1 . . . . . 54.

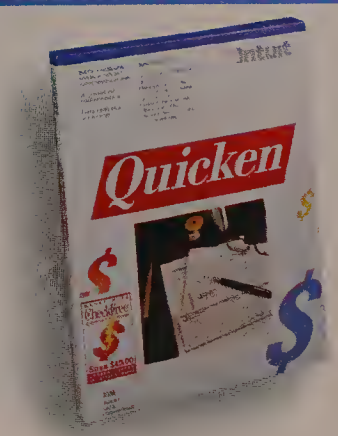
North Edge Software ... NCP
☐*Timeslips III 3.4*–Track every minute's efforts, then print the invoice and log the receivable all from the convenience of Timeslips III. Menu-driven and memory resident, this is a must for your service business. . . . . $169.

Samna ... NCP
5148 ☐Ami 1.0A . . . . . $129.
5799 ☐Ami Professional 1.0 . . . . . 319.

Simon & Schuster ... NCP
3314 ☐Typing Tutor IV 1.0 . . . . . 33.

Softlogic Solutions ... NCP
3546 ☐Disk Optimizer 4.01 . . . . . 45.
3542 ☐Software Carousel 3.01 . . . . . 55.

Software Publishing ... NCP
3495 ▣Professional Plan 1.02 . . . . . 59.
3499 ☐PFS:First Publisher 2.1 . . . . . 79.
4342 ▣PFS:First Graphics 1.0. . . . . 89.
3478 ▣PFS:First Choice 3.02 . . . . . 105.
3496 ▣Professional Write 2.11 . . . . . 139.
3493 ▣Professional File 2.01 . . . . . 189.
3482 ▣Harvard Graphics 2.12 . . . . . 299.
4669 ▣Harvard Graphics Access. Pk 1.0 299.
4284 ▣Harvard Project Manager 3.0. . . 439.



Intuit ... NCP
▣*Quicken 3.0*–Bring your personal or small business finances under control with Quicken. This easy-to-use program works just like your paper check book. Automate check writing, financial reporting, and more . . . . . $39.

Spinnaker ... NCP
4441 ☐Resume Kit 1.29 . . . . . 25.
4446 ☐8-in-1 2.0. . . . . 39.
4444 ▣Splash 1.0 . . . . . 59.

Symantec ... NCP
3427 ▣Q & A Write 1.01. . . . . 129.
3412 ▣Grandview 1.0 . . . . . 189.
3425 ☐Q & A 3.0 . . . . . 219.
3431 ☐Timeline 3.0. . . . . 369.

T/Maker ... NCP
5540 ▣ClickArt Business Images . . . . . 45.
4185 ▣Scrapbook+ 1.0 . . . . . 85.

TOPS ... NCP
3724 ▣NetPrint 2.0 *(share printers)* . . . . 119.
3726 ▣TOPS 2.1 . . . . . 115.
3725 TOPS Repeater *(network extender)* 129.
3720 *Flashcard 2.1 (AppleTalk network card; 1 year warranty)* . . . . . 159.

Traveling Software ... NCP
4190 Battery Watch 2.0 *(3½" only)* . . . . . 35.
3729 ▣LapLink Mac 2.0 *(Mac-PC transfer)* 79.
5179 ▣LapLink III . . . . . 85.
4891 ▣ViewLink 1.0 . . . . . 95.
3727 ▣DeskLink 2.21 . . . . . 99.

True BASIC, Inc. ... NCP
3561 ▣True BASIC 2.1 . . . . . 52.

1-800/243-8088

MMC MICROCOMPUTER MARKETING COUNCIL

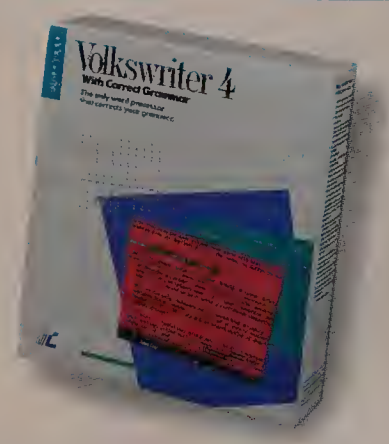
PC Connection 660W
6 Mill Street
Marlow, NH 03456
SALES 603/446-7721 **FAX** 603/446-7791

For IBM Personal Computers exclusively.

PC CONNECTION®

ALL ITEMS SUBJECT TO AVAILABILITY. PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

Or to illustrate



Volkswriter ... NCP
☒ *Volkswriter 4 with Correct Grammar*–Makes professional word processing simple. The first and only word processor with a fully integrated grammar corrector. . . . . $109.

Vericomp ... NCP
3765 ☒SoftBytes 2.0 . . . . . 35.
Volkswriter ... NCP
5046 ☒Volkswriter 4 *(w/Correct Grammar)* 109.
WordPerfect Corp. ... NCP
3799 ☒WordPerfect Library 2.0 . . . . . 75.
3804 ☐WordPerfect 5.1 . . . . . 265.
3805 ☒WordPerfect Network 5.1 . . . . . 389.
3806 Additonal Network Stations 5.1 . . . . 89.
WordStar USA ... NCP
2825 ☐WordStar Prof. Release 5.5 . . . . 229.
5000 ☐*Upgrade to Release 5.5* . . . . . 89.
Xerox ... NCP
4539 ☒Professional Extensions 1.0 . . . . 399.
3812 ☐Ventura Publisher 2.0 . . . . . call
XTREE Co. ... NCP
4512 ☒XTREE Pro 1.1 . . . . . 69.
XYQUEST ... NCP
4393 ☐XyWrite III Plus 3.55 . . . . . 229.

RECREATIONAL/EDUCATIONAL

Broderbund ... CP
1413 ☐Where/World Carmen Sandiego? . . 25.
1414 ☐Where/USA Carmen Sandiego? . . . 25.
1417 ☐Where/Europe Carmen Sandiego? 29.
5701 ☐Where/Time Carmen Sandiego? . . 32.
4948 ☒JetFighter *(by Velocity)* . . . . . 35.
Electronic Arts ... CP
5798 ☒Ferrari Formula I . . . . . 29.
5806 ☐F-16 . . . . . 35.
5805 ☒Starfleet II . . . . . 45.
5803 ☒Battle of Britain . . . . . 45.
5804 ☐Deluxe Paint II *(Enhanced)* . . . . . 89.
Microprose ... CP
4454 ☐F-19 Stealth Fighter . . . . . 39.
2725 ☐F-15 Strike Eagle . . . . . 22.
Microsoft ... NCP
2858 ☐Flight Simulator 4.0 *All New* . . . . . 39.
Mindscape ... CP
4897 ☐Gauntlet . . . . . 29.
4690 ☒Balance of Power 1990 . . . . . 33.
Parlor Software ... CP
3159 ☐Bridge Parlor 2.3 . . . . . 49.

Sierra On-Line ... CP
3405 ☒Thexder . . . . . $24.
4752 ☒Gold Rush . . . . . 25.
4455 ☒Leisure Suit Larry II . . . . . 33.
4345 ☒King's Quest IV *(512k version)* . . . 33.
5695 ☒Manhunter: San Francisco . . . . . 33.
4456 ☒Police Quest II . . . . . 33.
3404 ☒Space Quest II . . . . . 33.
5106 ☒Space Quest III . . . . . 36.
Spectrum Holobyte ... NCP
3467 ☒Tetris *(addicting mind teaser)* . . . . 24.
4283 ☒Falcon/AT *(F-16 simulation)* . . . . . 32.
5187 ☒VETTE! . . . . . 32.
Stone & Assoc. ... NCP
3436 ☒Memory Master *(ages 2-6)* . . . . . 22.
3435 ☒My Letters,Numbers,Words *(2-6)* 22.
5231 ☒Phonics Plus . . . . . 22.
3439 ☐2nd Math *(ages 7-16)* . . . . . 27.
Sublogic ... NCP
4653 ☐Up Periscope . . . . . 25.
3335 ☐Jet *(requires CGA or EGA)* . . . . . 33.
True BASIC, Inc. ... NCP
3559 ☒Algebra 3 with Workbook . . . . . 39.
3590 ☒Pre-Calculus with Workbook . . . . 39.

Electronic Arts ... CP
☐*Lakers vs. Celtics*–Play 5-on-5. You control NBA players with all-stars and teams . $35.
☐*Madden Football*–With over 160 different plays, includes 11 man teams, injuries, time outs, and weather . . . . . $35.

HARDWARE

Manufacturer's standard limited warranty period for items shown is listed after each company name. Some products in their line may have different warranty periods.

AST Research ... 2 years
1223 I/O Mini 2 C/S/P . . . . . 89.
1302 SixPakPlus 64k C/S/P . . . . . 129.
4107 RAMpage Plus 286 512k . . . . . 419.
4105 RAMpage Plus MicroChannel 512k 469.
Brother International ... 1 year
5787 HL-8e Laser Printer . . . . . 1899.
5788 HL-8Ps PostScript Laser Printer . . . call
5786 Toner/Drum Kit . . . . . 99.
Central Point ... 1 year
5042 Copy II PC Deluxe Option Board . . 115.

Compucable ... 2 years
1604 2-Position switch box . . . . . $25.
1605 3-Position switch box . . . . . 35.
Cuesta ... 1 year
1608 Datasaver 400 Watt *(power backup)* 429.
Curtis ... lifetime
1681 Curtis Clip CC-1 . . . . . 6.
1686 Disk Holder DB-1 . . . . . 8.
1718 3½" Disk Holder DB-2 . . . . . 8.
1704 Printer Stand PS-1 . . . . . 18.
1713 Filtered SafeStrip SPF-3 . . . . . 24.
1694 Emerald SP-2 . . . . . 36.
1707 Ruby SPF-2 *(6 outlets; EMI/RFI filtered; 6 ft cord)* . . . . . 55.
1708 Ruby-Plus SPF-2 Plus *(w/FAX & modem protection)* . . . . . 65.
DacEasy ... 1 year
ACCELERATORS
3211 Breakthru 286-8 *(8 MHz)* . . . . . 225.
3210 Breakthru 286-12 *(12 MHz)* . . . . . 349.
Epson ... 1 year
We are an authorized Epson Service Center.
1906 FX-850 *(80 col., 264 cps, 9 pin)* . . . call
1904 FX-1050 *(136 col., 264 cps, 9 pin)* . . call
5183 LQ-510 *(80 col., 180 cps, 24 pin)* . . 349.
1930 LQ-850 *(80 col., 264 cps, 24 pin)* . . call
4117 LQ-950 *(110 col., 220 cps, 24 pin)* . . call
1917 LQ-1050 *(136 col., 264 cps, 24 pin)* call
4116 LQ-2550 *(136 col., 333 cps, 24 pin)* call
5184 LX-810 *(80 col., 180 cps, 9 pin)* . . . 199.
1052 Printer-to-IBM cable *(6 feet)* . . . . . 15.
We carry a full line of Epson accessories and ribbons. Call us with your needs.
5th Generation ... 1 year
3952 Logical Connection 512k . . . . . 529.
4921 Logical Connection 1 Meg . . . . . 659.
Hayes ... 2 years
2304 Smartmodem 1200 . . . . . 289.
2305 Smartmodem 1200B *(w/Smartcom II)* 289.
2306 Smartmodem 1200B *(hardware only)* 259.
2307 Smartmodem 2400 . . . . . 429.
2308 Smartmodem 2400B *(w/Smartcom II)* 429.
2309 Smartmodem 2400B *(hardware only)* 399.

Samna ... NCP
☐*Ami Professional 1.0*–Full-featured word processor for high-powered office automation tasks. Includes mail merge, macros, thesaurus, professionally designed style sheets, and integrated drawing and charting capabilities . . . . . $319.

For IBM Personal Computers exclusively.

PC CONNECTION®

PC Construction.

Using the old beam.
(Or, how we learned to log on.)

It takes a lot of lumber to run a computer mail order business here in the high rise hamlet of Marlow, NH (pop. 560). In fact, we recently started construction of a new sales and distribution center. Inspired by our well-built mascots, we've cleared ten acres, put in a new road, dug a pond, and are getting as much done as possible before winter. (At which time any tools you drop outside are lost until spring).

Fast stud service!

Admittedly, we've kept the local carpenters pretty busy since 1982, when we had them put some shelves in a closet to create our first warehouse. They've already restored the stately Christmas Tree Inn (c. 1833) to serve as our headquarters and conference center, rebuilt the dam out front, and even created a state-of-the-art TV production studio.

And what, you may ask, do all those sticks, stones, bricks, bracks, tongues and grooves rest upon?

An awful lot of concrete to tell the truth. But it sure helps to have a solid base of customers. So next time you're remodeling your micro, call us for the peripherals and programs. We'll make sure you don't get hammered on price. And we'll provide the toll-free technical support you need to make sure that everything's screwed on right and no wires are crossed. Plus, to keep you on the straight and narrow, we have a gift to help you follow all the rules. Read on!

Take our measure. For free!

Business, like football, is often a game of inches. And the best way to make short work of your long shots is with your very own PC Connection Folding Ruler. Because it's the perfect tool for determining the long and the short of just about anything. You'll receive one free with any order of $500 or more between now and December 31.

Just call 1-800/243-8088 or 1-603/446-7721, M-F 9:00 to 9:00; Saturday to 5:30. If you're planning to visit, please call ahead.

You'll never get the short end of the stick with the PC Connection Folding Ruler. Offer not available to accounts on net terms. One per customer.

For IBM Personal Computers exclusively.

PC CONNECTION®

©COPYRIGHT PC CONNECTION, INC., 1989. PC CONNECTION AND THE RACCOON CHARACTER(S) ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH.

what you demonstrate?

Hercules ... 2 years
3 Graphics Card Plus. . . . . $189.
0 VGA Card . . . . . 189.
Intel ... 5 years
6 2400B Internal Modem . . . . . 159.
2 2400B Internal Modem 2 *(for PS/2)* 249.
) 2400 Baud External Modem . . . . . 179.
6 Inboard 386/PC w/1 Meg . . . . . 599.
6 Inboard 386/PC Piggyback 4 Meg 1249.
9 Inboard 386/AT *(req. inst. kit)* . . . . 859.
8 Inboard 386/AT Installation Kit. . . . 139.
6 Above Board Plus 512k . . . . . 419.
7 Above Board Plus I/O 512k . . . . . 449.
6 Above Board Plus 8 2 Meg . . . . . 699.
2 Above Board Plus 8 I/O 2 Meg . . . 739.
2 Above Board 2 Plus 512k . . . . . 469.
9 Above Board Plus Piggyback w/2 Meg *(upgrades to 6 Meg)*. . . . . call
5 Connection Coprocessor . . . . . 769.
7 Visual Edge *(improve the output of your HP Laserjet II)* . . . . . 449.
MATH COPROCESSORS
4 8087-2 *(for 8 MHz 8088 CPU's)* . . . 129.
8 80287 *(for 6 MHz 80286 CPU's)*. . . 135.
0 80287-8 *(for 8 MHz 80286 CPU's)* . 199.
9 80287-10 *(for PS/2 Models 50 & 60)* 229.
0 80387SX *(for 80386SX CPU's)*. . . . 309.
1 80387 *(for 16 MHz 80386 CPU's)*. . 349.
2 80387-20 *(for 20 MHz 80386 CPU's)* 399.
1 80387-25 *(for 25 MHz 80386 CPU's)* 499.

Software Publishing ... NCP
☐ *Harvard Graphics 2.12*–Be "free and easy" with the industry's best-selling presentation graphics package. Now with a coupon for free drawing accessory (normally $149 List). Graphically the best choice . . . . . $299.

Kensington Microware ... 1 year
31 Masterpiece . . . . . 94.
32 Masterpiece Plus . . . . . 109.
72 PowerTree 10 . . . . . 19.
73 PowerTree 20 . . . . . 27.
74 PowerTree 50 . . . . . 54.
97 Expert Mouse *(Trackball for PS/2)* . 115.
Key tronic ... 3 years
37 101 Keyboard . . . . . 99.
8 101 Plus Keyboard . . . . . 99.
Kraft ... 5 years
00 3 button Thunder Joystick. . . . . 29.
3 ThunderStick w/new game adapter 55.
92 3 button Joystick w/game adapter . 45.

Intel ... 5 years
Inboard 386/PC–Boost your PC performance. A 16Mhz 80386 processor and 1Mb RAM allows you to handle today's most advanced applications, including Lotus 1-2-3 Release 3. 30 day money back guarantee. . . . . $599.

5801 New Game Adapter *(2 game ports)*. 27.
5802 Trackball . . . . . 69.
Logitech ... limited lifetime
5464 Series 2 Mouse *(C9 for PS/2's)* . . . . 65.
4388 ClearCase Mouse *(serial only)*. . . . . 65.
5151 HiREZ Mouse *(C9)* . . . . . 85.
5152 Mouse w/Paint Show *(C9)*. . . . . 99.
4297 ScanMan Plus *(hand scanner)* . . . 185.
Magnavox ... 2 years
4758 13″ CGA Monitor *(8CM515)* . . . . . 269.
4760 13″ Hi-Res Monitor *(9CMO53)* . . . 369.
4761 13″ VGA Monitor *(9CMO62)* . . . . . 389.
4762 13″ VGA Monitor *(9CMO82)* . . . . . 449.
Micron Technology ... 2 years
5818 Beyond 640 EMS Board 1 MB *(exp. to 8 MB w/daughter card)*. . . . . 369.
5821 Beyond EX Extended Memory Board 2 MB *(exp. to 4 MB w/daughter card)* . . . . . 599.
Microsoft ... lifetime
2870 Mach 20 *(1 year warranty)*. . . . . 349.
2897 Mouse with Paintbrush . . . . . 109.
2896 Mouse with Easy CAD. . . . . 125.
2898 Mouse with Windows 286 2.1 . . . . 139.
Mouse Systems ... lifetime
2812 OmniMouse *(serial only; 1 year wrty)* 39.
4306 PC Mouse II w/PC Paint+ . . . . . 89.
NEC ... 2 years
4799 Multisync 2A *(VGA Monitor)* . . . . . 499.
5085 Multisync 3-D Monitor. . . . . 689.
Orchid Technologies ... 4 years
3069 Tiny Turbo 286 *(accelerator board)* 219.
4765 Designer 800 VGA *(360 x 480)* . . . 159.
4690 ProDesigner VGA *(800 x 600)*. . . . 249.
PC Power & Cooling Sys. ... 1 yr
REPLACEMENT POWER SUPPLIES
3202 Turbo Cool 150 *(25° - 40° cooler)* 129.

1-800/243-8088

MMC MICROCOMPUTER MARKETING COUNCIL

PC Connection 660W
6 Mill Street
Marlow, NH 03456
SALES 603/446-7721 **FAX** 603/446-7791

3205 Turbo Cool 250 *(25° - 30° cooler)* $169.
3200 Silencer 150 *(84% noise reduction)* 115.
4514 Turbo Cool 375 . . . . . 299.
Practical Peripherals ... 5 years
3101 1200 Baud Internal Modem . . . . . 69.
3100 1200 Baud External Modem *(mini)* . 77.
3097 Microbuffer Inline *(par. print buffer/32k)* . . . . . 135.
3103 2400 Baud Internal Modem. . . . . 139.
3102 2400 Baud External Modem . . . . . 179.
5285 2400 Baud Ext. MNP Modem *(Lev. 5)* 209.
4542 2400 Baud Internal Modem for PS/2. . 229.
Princeton Graphics ... 1 year
3166 Ultrasync *(800 x 600 max. res.)*. . . 549.
Quadram ... 1 year
5143 JT-FAX 9600 . . . . . 549.
Safe Power Systems ... 2 years
4561 Safe 250W *(standby power bkup)* 249.
4562 Safe 425W *(standby power bkup)* 369.
4563 Safe 500W *(standby power bkup)* 495.
SOTA Technology ... 2 years
5107 Floppy Drive Controller *(S/P)*. . . . . 99.
5109 SOTA VGA/16 *(with 256k)* . . . . . 219.
5111 SOTA 286i-12 *(12 MHz accelerator)* 299.
5402 SOTA 386i-16 *(16 MHz accelerator)* 419.
Targus ... lifetime
4899 Nylon Laptop carrying case . . . . . 55.
4901 Leather Laptop carrying case . . . . 139.
TheComplete PC ... 2 years
4889 TheComplete Hand Scanner 400 . . 159.
5598 TheComplete Half Pg. Scanner 400 189.
4887 TheComplete FAX 9600 . . . . . 429.
5140 TheComplete Page Scanner. . . . . 549.
OCR SOFTWARE
5789 TheComplete OCR/HS 1.0 . . . . . 199.
5807 TheComplete OCR/Page 1.0. . . . . 319.
Toshiba ... 1 year
3684 T1000 Laptop *(80C88, 6.4 lbs.)*. . . 669.
4856 T3100E Laptop *(12 MHz, 20 Meg)* 2749.
4958 T1600 Laptop *(12 MHz, 20 Meg)* . 3249.
Video 7 ... 5 years
3778 VEGA VGA . . . . . 259.
4193 FastWrite VGA *(includes 256k)*. . . . 319.
4194 VRAM VGA *(includes 256k)* . . . . . 469.

Microsoft ... NCP
☐ *Flight Simulator 4.0*–New version! Create and fly your own experimental aircraft or choose from a variety including the Sopwith Camel and Schwiezer 2-32 Sailplane. Moving scenery and random weather add to realism . . . . $39.

For IBM Personal Computers exclusively.

PC CONNECTION®

*DEFECTIVE SOFTWARE REPLACED IMMEDIATELY. DEFECTIVE HARDWARE REPLACED OR REPAIRED AT OUR DISCRETION

Call 800/243-8088.

DRIVES

IOMEGA ... 1 year

2485 Bernoulli II Single 20 Meg Internal $767.
5116 Bernoulli II Single 44 Meg Internal 995.
2486 Bernoulli II Dual 20 Meg External 1659.
5117 Bernoulli II Dual 44 Meg External 1969.
4276 20 Meg Cartridge Tripak *(5¼")* . . . 169.
5113 44 Meg Cartridge Tripak *(5¼")* . . . 249.
CONTROLLERS (required)
2499 PC2 Card . . . . . 169.
2500 PC2B Card *(bootable card for PC/XT/AT)* . . . . . 229.
2502 PC4 Card *(for PS/2 Model 50/60/70/80)* . . . . . 299.

Mountain Computer ... 1 year

2917 40 Meg Internal Tape Drive . . . . . 379.
2915 40 Meg External Tape Drive . . . . . 479.
2916 40 Meg External Tape Drive with Power Supply . . . . . 569.
5378 60 Meg External Tape Drive with Power Supply . . . . . 1169.
5616 150 Meg External Tape Drive with Power Supply . . . . . 1495.
5499 80 Meg Internal Tape Drive . . . . . 519.
5503 80 Meg External Tape Drive . . . . . 629.
5190 40 Meg Data Cartridges *(pre-formatted)* . . . . . 35.

Pacific Rim ... 1 year

5010 1.2 Meg External *(for PS/2's)* . . . . . 215.
5011 360k External 5¼" Drive . . . . . 179.

Plus Development ... 2 years

3105 Hardcard 20 Meg *(49 ms)* . . . . . 549.
3106 Hardcard 40 Meg *(28 ms)* . . . . . 699.

Seagate ... 1 year

FREE PCTV® Hard Drive Installation Tape with purchase of 20, 30 or 40 Meg Seagate drive for the IBM PC (not for AT). Beta or VHS.

2285 20 Meg Internal Hard Drive ST225 *(w/controller and cables, 65 ms)* . . 289.
2286 30 Meg Internal Hard Drive ST238 *(w/controller and cables, 65 ms)* . . 299.
4554 40 Meg Int. HD ST251-1 (28 ms) . . 359.
2287 40 Meg Int. HD for PC 251-1 *(w/controller and cables, 28 ms)* . $435.
4624 80 Meg Int. HD ST4096 (28 ms) . . 619.

TEAC ... 1 year

4950 PC, XT 360k Drive *(5¼")* . . . . . 79.
4951 720k Drive *(specify XT or AT, 3½")* . 79.
4670 1.44 Meg Drive for XT *(3½")* . . . . . 99.
4326 1.44 Meg Drive for AT *(includes Bastech software utilities, 3½" copy prot.)* . 119.

Toshiba ... 1 year

3650 AT 360k Drive *(5¼")* . . . . . 85.
3649 AT 1.2 Meg Drive *(5¼")* . . . . . 99.
4755 AT 1.44 Meg Drive *(3½", includes Bastech software utilities)* 119.

MISCELLANEOUS

CompuServe

1676 CompuServe Information Service . . 24.

Cables ... lifetime

1019 Smartmodem-to-AT cable *(10 feet)* . 15.
1050 Parallel Printer cable *(15 feet)* . . . . . 19.

Kraft ... 5 years
Trackball–For IBM and compatibles, features include software selectable dpi ranges from 10 to 1150, ergonomic design and easy installation. An optional foot pedal is available for one-handed control . . . . . **$69.**

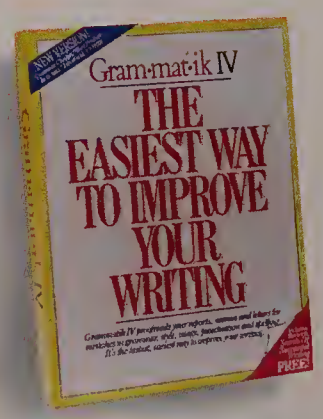
Logitech ... limited lifetime
ScanMan Plus–Features new case design for easier handling! Offers O.C.R. compatibility for broader range of scanning capabilities. Includes enhanced PaintShow Plus graphic editor and works with most popular applications . . **$185.**

MEMORY

3248 256k DRAMs *(120 nanosecond)* . . . call
4366 1 Meg x 9 SIMMs *(100 nanosecond)* call
5510 1 Meg x 9 SIMMs *(80 nanosecond)* call
5746 1 Meg Chips *(80 nanosecond)* . . . . call

OUR POLICY

- We accept VISA and MASTERCARD only.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail.
- International orders U.S. $250 minimum.
- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment of your order.
- COD max. $1000. Cash, cashier's check, or money order.
- 120 day limited warranty on all products.*
- To order, call us Monday through Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-3383 Monday through Friday 9:00 to 5:30.



Reference Software ... NCP
Grammatik IV 1.0–Checks for grammar, style, usage, punctuation and spelling errors in one pass! Now works within WordPerfect 5.0, Microsoft Word 5.0, Professional Write 2.1, WordStar 5.5, XY Write III & more. . . . **$52.**

DISKS

All disks have a lifetime warranty.

5¼" DS/DD Disks *(360k)*

3291 Sony *(10 disks per box)* . . . . . 12.
2789 Maxell MD2-D *(10 disks per box)* . . . 13.
4192 Verbatim Datalife *(10 disks per box)* . 13.

5¼" DS/High Density Disks *(1.2 Meg)*

3770 Verbatim Datalife *(10 disks per box)* . 19.
3292 Sony *(10 disks per box)* . . . . . 19.
2790 Maxell MD2-HD *(10 disks per box)* . 19.

3½" DS/DD Diskettes *(720k)*

3297 Sony *(10 disks per box)* . . . . . 15.
3772 Verbatim *(10 disks per box)* . . . . . 15.
2792 Maxell *(10 disks per box)* . . . . . 16.

3½" DS/High-Density Diskettes *(1.44 Meg)*

3298 Sony *(10 disks per box)* . . . . . 32.
3773 Verbatim *(10 disks per box)* . . . . . 32.
2793 Maxell *(10 disks per box)* . . . . . 32.

SHIPPING

Note: Accounts on net terms pay actual shipping.

Continental US:

- For monitors, printers, Bernoulli Boxes, computers, hard drives, and power backups, pay actual charges. Call for UPS 2nd-Day & Next-Day-Air.
- For all other items, add $3 per order to cover UPS Shipping. For such items, we automatically use UPS 2nd-Day-Air at no extra charge if you are more than 2 days from us by UPS ground.

Hawaii:

- For monitors, printers, Bernoulli Boxes, computers, hard drives, and power backups, actual UPS Blue charge will be added. For all other items, add $3 per order.

Alaska and outside Continental US:

- Call 603/446-3383 for information.

For IBM Personal Computers exclusively.

PC CONNECTION®

© COPYRIGHT PC CONNECTION, INC., 1989. PC CONNECTION AND PCTV ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH. THE RACCOON CHARACTER(S) ARE TRADEMARKS OF PC CONNECTION, INC.

The Easy Road to Desktop Publishing

Occasional desktop publishers need easy-to-use software that still yields elegant pages.

Four under-$200 DTP packages let even novices produce surprisingly sophisticated short documents.

George Beinhorn

Want to put out a professional-looking report or newsletter enlivened with snappy graphics? You needn't strain your word processor's talents or spring for an expensive (and complex) high-end desktop publishing (DTP) program. Today's low-end DTP programs are intelligently streamlined versions of the big boys, with prices and learning curves anybody can handle. This review tackles the four leading products in the category: Logitech's new *Finesse*, Software Publishing's best-selling *PFS: First Publisher*, Springboard Publishing's *Springboard Publisher*, and our Best Buy, Timeworks' *Publish-It*.

In document-production power, these four programs fall between high-end word processing and professional-level DTP. Superficially, *Microsoft Word*'s and *WordPerfect*'s newspaper-style column layouts, wide range of font styles and sizes, and support of graphics integration might seem to make these word processors able DTP programs. But while both offer primitive page preview with graphics, neither lets you edit WYSI-

THE REDWOOD VISTA

HOMEOWNER

City News Beat

City Council Approves Thompson Environmental Impact Report

Last night's City Council meeting ended with a 5-2 vote to approve the EIR for the Thompson Project, which has been hotly contested by the public since it came up for approval. The approval of the EIR was, in essence, a rejection of an appeal sought after by a group of citizens concerned about toxic waste that is possibly resident in the soil, a former dump site.

The local residents have been interested in the proceedings since the project first came up for approval in September. This is a very unusual situation that both the Planning Commission and the City Council have faced, given that there is a project already approved for the site in question.

The approved project consists of 1.75 million square feet of commercial space, some designated for research and development.

The proposed Thompson Project will split the space into a combination of residential (apartments) and commercial property. Initial outcries of the public focused on the detrimental impact that the increased traffic would have on the community.

However, what most of the citizens did not know was that the project that was originally approved would have had a much more detrimental effect on the environment.

Obviously, everyone's first choice is to maintain the space as

Continued Page 3 Col 3

Sports News

Crew Races in Redwood Vista

It's that time of year again. Soon, college teams from all over the state will be travelling to the Vista to have their annual crew competition. The meets will start

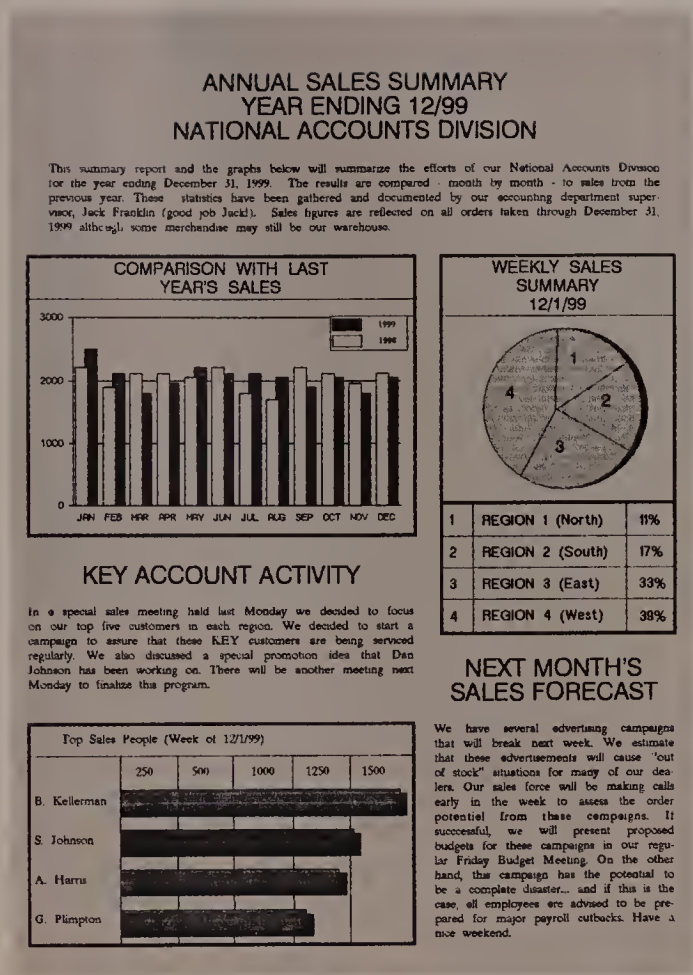
next month with a bang, the traditional Cal vs. Stanford meet. Both teams are reported to have outstanding new freshmen on the team. Cal and Stanford both lost some of their strongest team members who were seniors and graduated last year.

As part of Cal's successful recruiting effort this year, they acquired Monroe High School's ace oarsman, Steve Frazier. Steve was an academic All-American and captain of the team which took first place in the state regatta last year.

Be sure to come early to get a prime space on the lawn and watch the practice sprints beginning at the end of the lagoon. The meets will begin at 8:00 AM, with heats every half hour.

The usual vendors will be out, selling beer, soft drinks, hot dogs, and hamburgers.

Redwood Vista Homeowner Page 1



ANNUAL SALES SUMMARY
YEAR ENDING 12/99
NATIONAL ACCOUNTS DIVISION

This summary report and the graphs below will summarize the efforts of our National Accounts Division for the year ending December 31, 1999. The results are compared - month by month - to sales from the previous year. These statistics have been gathered and documented by our accounting department supervisor, Jack Franklin (good job Jack!). Sales figures are reflected on all orders taken through December 31, 1999 although, some merchandise may still be our warehouse.

COMPARISON WITH LAST YEAR'S SALES

WEEKLY SALES SUMMARY 12/1/99

1	REGION 1 (North)	11%
2	REGION 2 (South)	17%
3	REGION 3 (East)	33%
4	REGION 4 (West)	39%

KEY ACCOUNT ACTIVITY

In a special sales meeting held last Monday we decided to focus on our top five customers in each region. We decided to start a campaign to assure that these KEY customers are being serviced regularly. We also discussed a special promotion idea that Dan Johnson has been working on. There will be another meeting next Monday to finalize this program.

NEXT MONTH'S SALES FORECAST

We have several advertising campaigns that will break next week. We estimate that these advertisements will cause "out of stock" situations for many of our dealers. Our sales force will be making calls early in the week to assess the order potential from these campaigns. If successful, we will present proposed budgets for these campaigns in our regular Friday Budget Meeting. On the other hand, this campaign has the potential to be a complete disaster... and if this is the case, all employees are advised to be prepared for major payroll cutbacks. Have a nice weekend.

Top Sales People (Week of 12/1/99)

WYG text, the critical DTP capability.

On the other hand, the packages reviewed here can't equal *Ventura*'s or *PageMaker*'s ability to create long documents or those programs' sophisticated typography and design features. None of the four can import Encapsulated PostScript (EPS) files, for example, and only *Finesse* accepts scanned TIFF images.

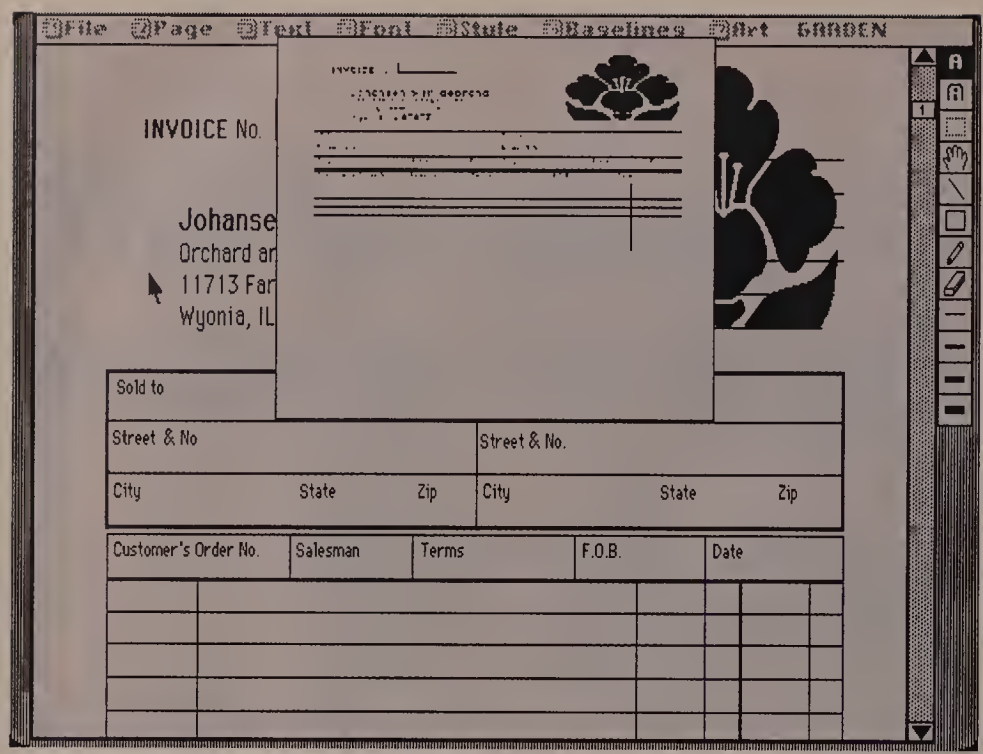
Assuming you can live without Bezier curves and book-length documents, here are the essential features to watch for. A good low-end DTP program should supply document templates to help beginners position imported text and graphics. Once the material is in place, solid word processing features become essential. Style sheets—found only in *Publish-It*—are a major convenience, letting you quickly set and change layouts and paragraph styles throughout a document. Good drawing tools are helpful, but you don't have to be an artist if the package has a good clip-art library. Finally, support for downloadable fonts (such as those from Bitstream) can greatly improve the appearance of a document, both on the screen and on the page.

Finesse 3.0

The new kid on the low-end DTP block, Logitech's $179 *Finesse*, has a useful range of page-design features and a fine selection of Bitstream *Fontware*. Alas, *Finesse* is limited to 16-page documents, and the program's slim image-handling features make it a poor choice if your documents require sophisticated graphics.

Finesse offers an array of design elements: 20 single, dashed, and double line styles, for example, versus the other programs' maximum of 5. But its word processing features are just adequate: *Finesse* lets you set eight left-justified or decimal tabs, for instance, but doesn't offer center- or right-aligned tabs. The package's graphics support is very limited; you can draw lines and boxes, but that's about all.

Finesse's excellent font package compensates somewhat for its poor graphics support. The newsletter on the left was output on a 9-pin dot matrix Brother printer. Publish-It's control of typography is unrivaled. Note the tight, attractive letterspacing and word spacing in the newsletter on the right.



PFS: First Publisher is quick and neat, but its page preview leaves much to be desired: Elements are dropped, resolution is poor, and the page image is squashed.

Finesse's offering of Bitstream *Fontware* is the best in its class, however, with 11 scalable outline fonts (the installation kit is included free). Moreover, the program's built-in scanner support is a persuasive enticement for users to buy Logitech's $309 hand-held ScanMan unit.

Combined with its good layout tools and scanner support, the Bitstream tie-in makes *Finesse* a laudable product. But its features set is slimmer than *Publish-It*'s, and its anemic graphics controls make designing heavily illustrated documents taxing.

EXECUTIVE SUMMARY

Finesse 3.0

Desktop publishing program

Finesse competes against look-alike *Publish-It*, and that's not easy. With built-in support for scanners and an outstanding set of included Bitstream Fontware, it's a fine platform for quick-and-easy document design. But *Finesse*'s graphics and drawing support are minimal.

	POOR	FAIR	GOOD	EXCELLENT
Page design and layout			●	
Typographic features			●	
Graphics features	●			
Printing				●
Overall value			●	

Reader service no. 610

PFS: First Publisher 2.1

The category's long-time best-seller, Software Publishing's *PFS: First Publisher* is quick, easy to use, and a bargain at $129 (see *The Software Shelf, PCW*, November 1988). But Software Publishing has rested on its laurels, and the program's feature set is now bested by the other programs in this review.

First Publisher lets you save page designs as templates for laying out other documents but lacks true style sheets. Worse, its word processing features are rudimentary, lacking even search and replace. And skimpy drawing tools limit you to straight lines, boxes, and freehand sketching.

While graphics handling is basic, the 150 images in the included clip-art library are of high quality (3000 images are available in separate libraries). You can also take snapshots of images with a new screen-capture program. *First Publisher* comes with five bit-mapped Bitstream *Fontware* typefaces, but you have to buy the installation kit separately.

First Publisher is aimed at novices, and its manual is stuffed with handy tips. But the low-end category that *First Publisher* once dominated has moved beyond it. The easiest-to-use package in this roundup, it also has the least all-around DTP power.

EXECUTIVE SUMMARY

PFS: First Publisher 2.1

Desktop publishing program

Silky smooth and easy to learn, *PFS: First Publisher* is still a good choice for simple documents. But other low-priced programs now offer more features.

	POOR	FAIR	GOOD	EXCELLENT
Page design and layout			●	
Typographic features			●	
Graphics features				●
Printing			●	
Overall value			●	

Reader service no. 611

FEATURES EVALUATION

$200 Buys a Lot of Desktop Publishing

Among these easy-to-use desktop publishing programs, Publish-It offers the most impressive range of features, with Finesse not far behind.

● Yes
○ No
◒ Deficient
▼ Limited only by available disk space

	Finesse 3.0	PFS: First Publisher 2.1	Publish-It 2.1	Springboard Publisher 1.01
Page design and layout				
Shows facing pages	●	○	●	○
200% and 50% page views	◒[1]	○	●	○
User-definable layout grids	●	○	○	●
Snap-to-grid	●	●	○	●
Multiple ruler units	●	●	●	●
Style sheets	○	○	●	○
Maximum pages per document	16	99	999	▼
Creates template documents	●	●	●	●
Automatic text flow across pages	◒[2]	◒[2]	◒[2]	●
Creates frame borders automatically	●	○	●	●
Headers/footers	●	○	●	○
Prints in landscape mode	●	○	●	○
Graphics handling				
Draws lines, squares, rectangles	●	●	●	●
Draws ovals/circles	○	○	●	●
Curve-fitting drawing tool	○	○	○	●
Draws polygons	○	○	●	●
Fill patterns	9	0	36	24
Freehand drawing	○	●	●	●
Flips images left–right, top–bottom	○	●	○	●
Vertical and diagonal text	○	○	○	●
Screen-capture utility	○	●	○	○
Graphics file formats supported				
EPS	○	○	○	○
.PCX	●	●	●	●
.PIC	○	●	●	○
TIFF	●	○	○	○

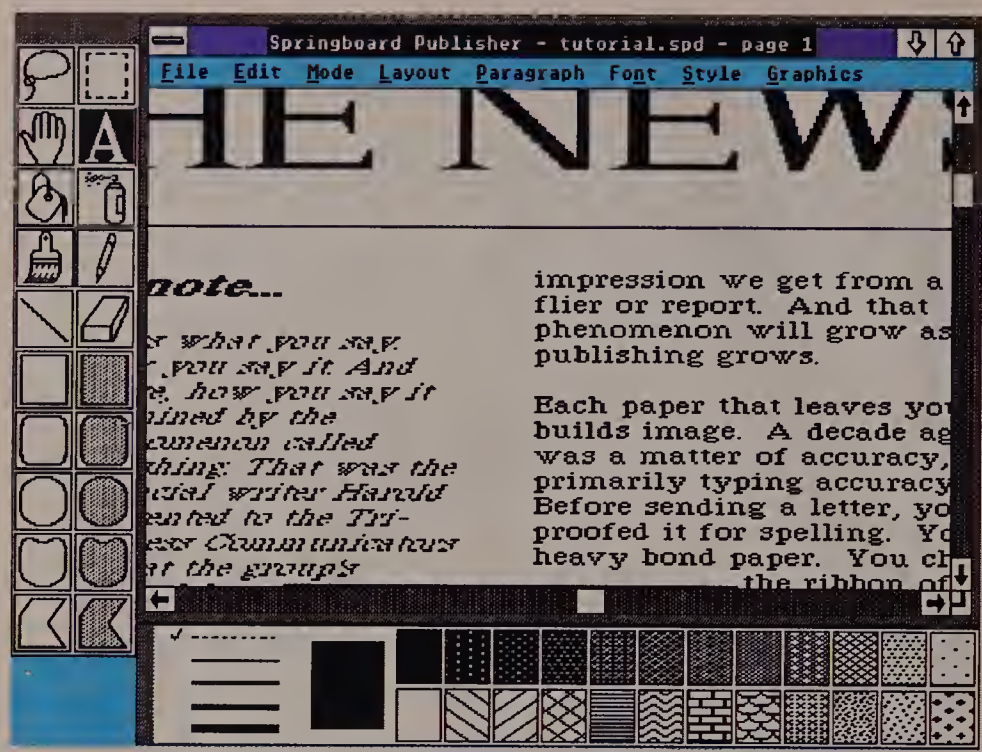
	Finesse 3.0	PFS: First Publisher 2.1	Publish-It 2.1	Springboard Publisher 1.01
Word processing/text importing				
Global search and replace	●	○	●	○
Left/right/center tabs	◒[3]	○	●	●
Automatic page numbers	●	○	●	●
Widow/orphan control	○	○	○	●
Automatic hyphenation	●	○	●	○
Manual hyphenation	●	○	●	○
Automatic kerning	○	○	●	●
Manual kerning	●	○	●	●
Word spacing control	○	○	●	○
Reverse type (white on black)	◒[4]	◒[4]	●	●
Built-in soft fonts	11	15	7	6
Font size range	6–99	6–72	7–72	9–72
Supports HP-compatible downloadable fonts	○	●	○	●
Supports Bitstream Fontware	●	◒[5]	◒[5]	◒[6]
Imports text formats[7]				
Word 5.0	●	◒[8]	●	●
WordPerfect 5.0	●	●	◒[9]	●
WordStar 5.0	●	◒[10]	◒[11]	◒[12]
Wang	○	●	○	○

[1] Fifty percent view available.
[2] You must create text frames to receive text overflow from previous pages.
[3] Left tabs only.
[4] In graphics mode only.
[5] Does not include Bitstream installation kit.
[6] Printer fonts only.
[7] Including earlier versions of word processing programs.
[8] Only up to Word 4.0.
[9] Only up to WordPerfect 4.2.
[10] Only up to WordStar 4.0.
[11] Only up to WordStar 3.x.
[12] Only up to WordStar 3.3.

Publish-It 1.13

A wealth of well-implemented features puts *Publish-It* a peg above its rivals in this review. Where others give a passing nod to hyphenation and kerning, for example, *Publish-It* excels at both. The $200 program lacks only automatic text flow and an undo command.

Feature-rich but friendly, *Publish-It* helps you work smoothly and logically. Want to change the overall appearance of a document? Powerful style sheets control a full range of formatting specs. Need to align the columns in a table set in proportionally spaced text? *Publish-It* comes to the rescue with a table-justification feature that lets you



Springboard Publisher's on-screen text resolution is nothing to get excited about, but no other program in this group can match its array of drawing tools.

set up nine tabs using left, right, center, or decimal justification and dot or underscore leaders.

Publish-It's word processing features are the best in the bunch, and its typographic features are a delight. You can kern letter pairs in half-point (1/144-inch) increments and set letterspacing (tracking) for text. A commendable hyphenation routine can even prevent two specified words from being separated at the end of a line—a trick that baffles *PFS: First Publisher* and *Springboard Publisher.*

First-class graphics features let you scale and size images easily, and about 100 home- and hobby-oriented graphic images are supplied. On the downside, *Publish-It* can handle only eight fonts at a time. It supports Bitstream fonts, but you must buy the fonts and installation kit separately.

Timeworks proved that compromise can be creative when *Publish-It* version 1.12 earned our Best Buy this spring (see *The Software Shelf, PCW,* February 1989). Thanks to its excellent word processing, graphics, and typographic controls, *Publish-It 1.13* wins our award again.

EXECUTIVE SUMMARY

Publish-It 1.13

Desktop publishing program

BEST BUY

Publish-It's first-rate typographic controls, well-designed layout and drawing tools, and good word processing make it the best-balanced package reviewed.

	POOR	FAIR	GOOD	EXCELLENT
Page design and layout				●
Typographic features				●
Graphics features			●	
Printing			●	
Overall value				●

Reader service no. 612

Springboard Publisher 1.01

Windows-based *Springboard Publisher* is one of those programs that almost gets it right. Its image manipulation and drawing tools are the best in this group, but its word processor is flawed. Creating master pages is remarkably easy, but the $200 program accesses the hard disk so often it becomes unbearably slow.

Springboard delivers such niceties as widow and orphan control, automatic file backup, and page and column hard breaks, and it deserves special mention for the way it flows text between page frames. While the other programs make you link new frames manually to allow text to flow onto subsequent pages, *Springboard* creates new master pages automatically.

Yet just when you get your hopes up, the program stalls. Its indifferent word processing features don't include search and replace, and you must convert *WordPerfect 5.0* files to *4.2* format before importing. Worse, the program lacks automatic hyphenation, so you have to insert hyphens manually before printing a document. Moreover, these hard hyphens move to the middle of lines when you edit the text and must be removed manually. In a program otherwise well suited to longish documents, this inconvenience lets you down with a thump.

Springboard Publisher's graphics tools are top-drawer; of the programs reviewed, only *Publish-It* comes close. You can easily draw straight lines and perfect squares and

See us at
COMDEX®/Fall '89
November 13–17, 1989
Tropicana Hotel
Las Vegas, Nevada
BOOTH T410

No Other Company We Know Imprints a Seal of Quality on Every Piece of Equipment it Ships. This Seal Guarantees Our Customers that Every Component has been Hand Inspected and Electronically Tested for 72 Consecutive Hours or More.

Samsung amber high res 14" flat screen monitor with tilt and swivel base.

All buttons and status lights easily accessible on front panel.

Modern, small footprint case with power supply

Keytronic enhanced 101 keyboard

We're Proud of Our Components

Compare our 386/25mhz features before you purchase any other system:

- *Intel 25mhz CPU chip is at the heart of our computer.*
- *Our chip set is from Chips and Technology.*
- *80387/Weitek co-processor socket for future upgrade.*
- *The best diagnostic and set up software from AMI.*
- *1mb of memory easily expandable to 8mb on the board.*
- *Western Digital 1:1 interleave mfm controller for fast data transfer.*
- *Seagate 32mb mfm hard disc with auto park provides substantial storage capacity at a fast 28ms access time.*
- *Your choice of Teac high density 1.2mb 5.25" or 1.44mb 3.5" floppy drive.*
- *Hercules compatible monographics card has 132 column capability. You also get color emulation and screen saver software.*

In addition to the 386/25, we offer virtually any configuration you need, such as:

MULTI**MICRO** TOWER VGA $3,995
386-25 Mhz 2 Mb Ram 64 Kb Cache,
32 Mb Hard Drive, 28 ms access time
Contr. 1:1 interleave
1.2 or 1.44 Floppy Drive
Seiko VGA color 1024 × 768 w/ctrl
285 Watts Power Supply

MULTI**MICRO** SUPER TOWER, VGA $9,995
386-33 Mhz 4Mb Ram 64 kb Cache
150 Mb ESDI 18 ms Hard Drive
1.2 or 1.44 Floppy Drive
Seiko VGA 1024 × 768 w/ctrl
Weitek/387 Co-Processor socket
350 Watts Power Supply

MULTI**MICRO** Custom Computers
We'll build whatever you need to the same exacting standards

Our Warranty is Simple
If anything goes wrong with your MULTI**MICRO** computer, we will repair or replace it for one year from date of purchase.

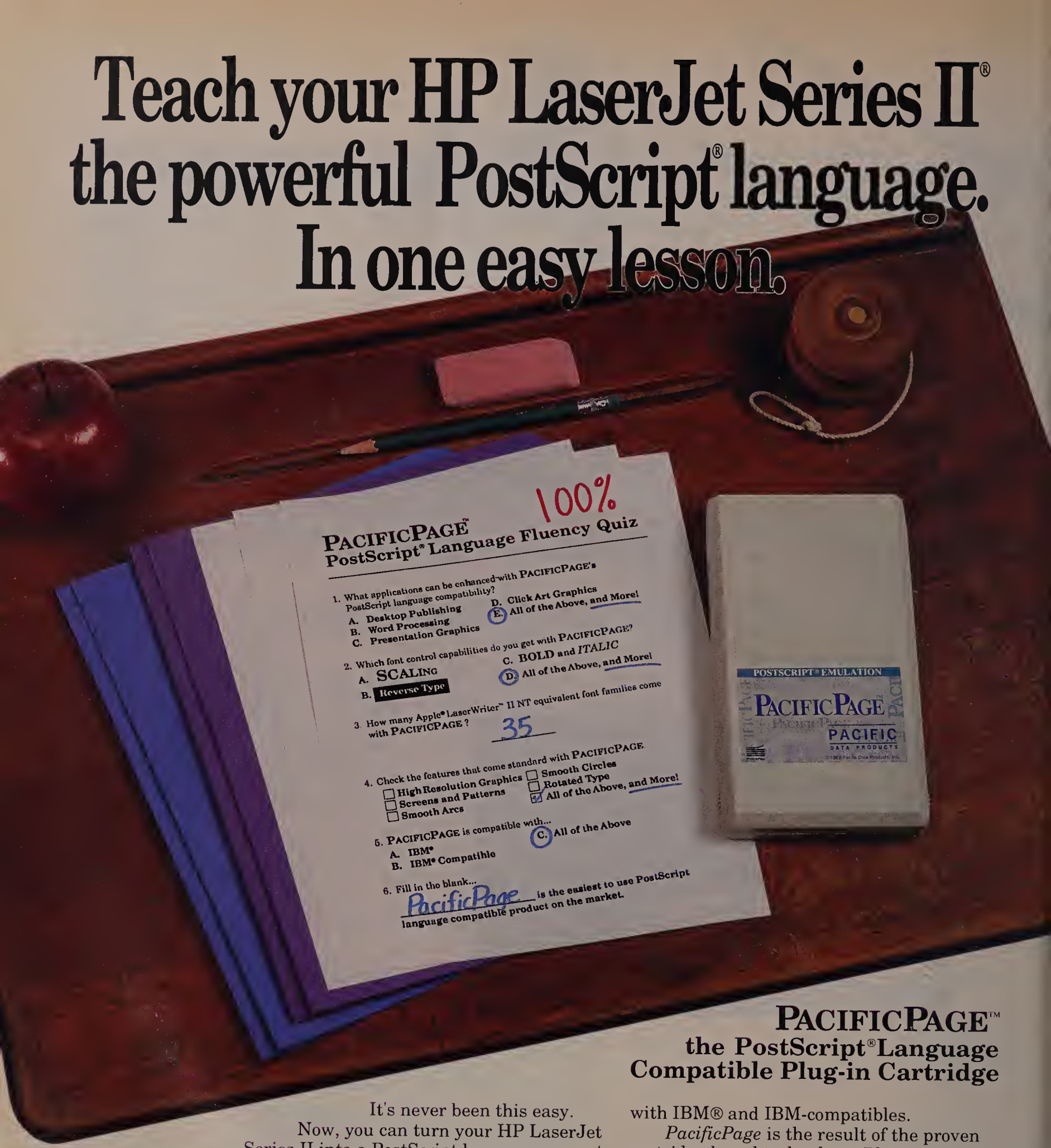
All brand names are registered trademarks of their respective companies.

MULTI**MICRO**
INCORPORATED

582 Folsom Street San Francisco, CA 94105
Phone 415.979.0140 or Fax 415.979.0142.

Circle 160 on reader service card

Teach your HP LaserJet Series II® the powerful PostScript® language. In one easy lesson.



PACIFICPAGE™
the PostScript® Language Compatible Plug-in Cartridge

It's never been this easy.

Now, you can turn your HP LaserJet Series II into a PostScript language compatible printer simply by plugging in Pacific Data Products' *PacificPage* cartridge. That's all. No other add-ins, software or cables are required.

Immediately start printing PostScript language output from Ventura Publisher®, Aldus PageMaker®, WordPerfect 5.0®, Microsoft Word® as well as many other graphics and business application software packages. And *PacificPage* is compatible with IBM® and IBM-compatibles.

PacificPage is the result of the proven cartridge-based technology–*Plotter in a Cartridge*™, *25 Cartridges in One!*™–from Pacific Data Products and the innovative PostScript emulation skills of Phoenix Technologies, Ltd.

Authorized Dealer:

BULLDOG
COMPUTER PRODUCTS
3241-E Washington Road • Martinez, GA 30907
(404) 860-7364 **1-800-438-6039**

PACIFIC
DATA PRODUCTS

6404 Nancy Ridge Dr., San Diego, CA 92121 • (619)552-0880 FAX (619)552-0889 • PacificPage, 25 Cartridges in One!, and Plotter in a Cartridge are trademarks of Pacific Data Products, Inc. PostScript is a registered trademark of Adobe Systems Inc. PhoenixPage is a registered trademark of Phoenix Technologies, Ltd. Copyright 1987, 1988 Phoenix Technologies Ltd. All other company and product names are trademarks of the company or manufacturer respectively. Copyright 1989 Pacific Data Products, Inc.

PhoenixPage

Circle 319 on reader service card

circles, create transparent or opaque patterns and lines, and use 35 paintbrushes and 24 fill patterns. And only *Springboard Publisher* can trace image edges and rotate images freely (the other programs limit you to rotation in 90-degree increments).

Springboard Publisher's few large flaws obscure its many small virtues. It handles graphics beautifully, for example, but sometimes runs like a turtle. It accepts long documents but can't hyphenate properly. It's recommended only for people who need its superior image manipulation.

Hand-Eye Coordination

The programs reviewed represent your best bets in low-end DTP, but the category is a lively one, with new mid- and low-end programs popping up all over. More important, emerging *Windows*-based word processors may finally lend word processing the DTP punch it now lacks (see the *Ami Professional* preview in this issue's Special Report).

Meanwhile, *PFS: First Publisher* will give you an easy introduction to DTP—though not much else. If you need flashy drawing tools and own a fast hard disk, *Springboard Publisher* will probably fill the bill. And if support for scanned images is important, *Finesse* is a must. But for all-around utility, *Publish-It* is the top choice; its wonderful control of typography points up the other packages' shortcomings, and its balance and depth of features win top honors, hands down. ●

George Beinhorn is a freelance writer in North San Juan, California.

For more information about all products in this article, circle reader service no. 901.

EXECUTIVE SUMMARY

Springboard Publisher 1.01

Desktop publishing program

Springbaord Publisher has greot drawing taols ond a slick, easy-ta-learn structure. It can even paur text into lang dacuments; toa bad it can't automaticolly hyphenate them. Lack of search and replace ond slow screen redraws and printouts are other minuses.

	POOR	FAIR	GOOD	EXCELLENT
Page design and layout			●	
Typographic features	●			
Graphics features				●
Printing			●	
Overall value			●	

Reader service no. 613

WHERE TO BUY

Finesse 3.0
Lagitech, Inc.
6505 Kaiser Dr.
Fremont, CA 94555
800/231-7717,
800/552-8885 Califarnia, 415/795-8500,
415/792-8901 (fax),
415/795-0408 (BBS)
LIST PRICE: $179
REQUIREMENTS: 640K, hard disk, DOS 2.1 or later versian (3.1 to use included Bitstream Fontware), graphics adapter, mause
TECHNICAL SUPPORT: unlimited, toll number, M–Th 8–5, F–Sun 9–4
OTHER SUPPORT: tech support BBS, BIX canference (Logitech)
Reader service no. 610

PFS: First Publisher 2.1
Software Publishing Corp.
1901 Londings Dr.
P.O. Box 7210
Mauntain View, CA 94039-7210
415/962-8910
LIST PRICE: $129
REQUIREMENTS: 512K, two disk drives, DOS 2.1 ar later versian, graphics adapter; mause recommended
TECHNICAL SUPPORT: unlimited, tall number, M–F 8–4
OTHER SUPPORT: quarterly newsletter free ta registered users, CampuServe forum (GO SPCFORUM)
Reader service no. 611

Publish-It 1.13
Timeworks
444 Lake Caak Rd.
Deerfield, IL 60015-4919
312/948-9200,
312/948-7626 (fax)
LIST PRICE: $199.95
REQUIREMENTS: 512K, twa disk drives, DOS 3.0 ar loter versian, graphics odapter (640K required far EGA, VGA, ar Hercules graphics); mause recammended
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: nane
Reader service no. 612

Springboard Publisher 1.01
Springboard Saftware
7808 Creekridge Cir.
Minneapolis, MN 55435
800/445-4780,
612/944-3915,
612/944-1832 (fax)
LIST PRICE: $129.95
REQUIREMENTS: 512K (640K recammended), 3MB hard disk space (1MB if Windaws is alreody installed), graphics adapter, mouse
TECHNICAL SUPPORT: unlimited, tall number, M–Th 8:30–5
OTHER SUPPORT: 30-day maney-back guarantee
Reader service no. 613

No Pain, Big Gains: Five Low-Cost LANs

Peer-to-peer LANs emphasize easy access to data and resources—not complicated administration.

If you'd rather spend more time working and less time playing network administrator, you may fit the peer-LAN profile.

Robert Lauriston

Peer-to-peer LANs have a bad—and wholly undeserved—reputation as underpowered country cousins to slick server-based LANs like *NetWare* and *LAN Manager*. They offer almost every important capability of server LANs (file and printer sharing, E-mail support, and the ability to run multiuser business software), plus one crucial capability that many server LANs lack: the ability to access network resources anywhere on the LAN, not just on the server.

Whereas server LANs often must be set up by high-priced network specialists, peer LANs are designed to be installed by end users. Also, peer LANs are generally easier to maintain and use—and much kinder to the pocketbook. A full-featured ten-station peer LAN will save you at least $1000 over a comparable server LAN—and probably even more. If you include the cost of the expensive high-speed server that you won't need to buy, you could end up saving $5000 or more.

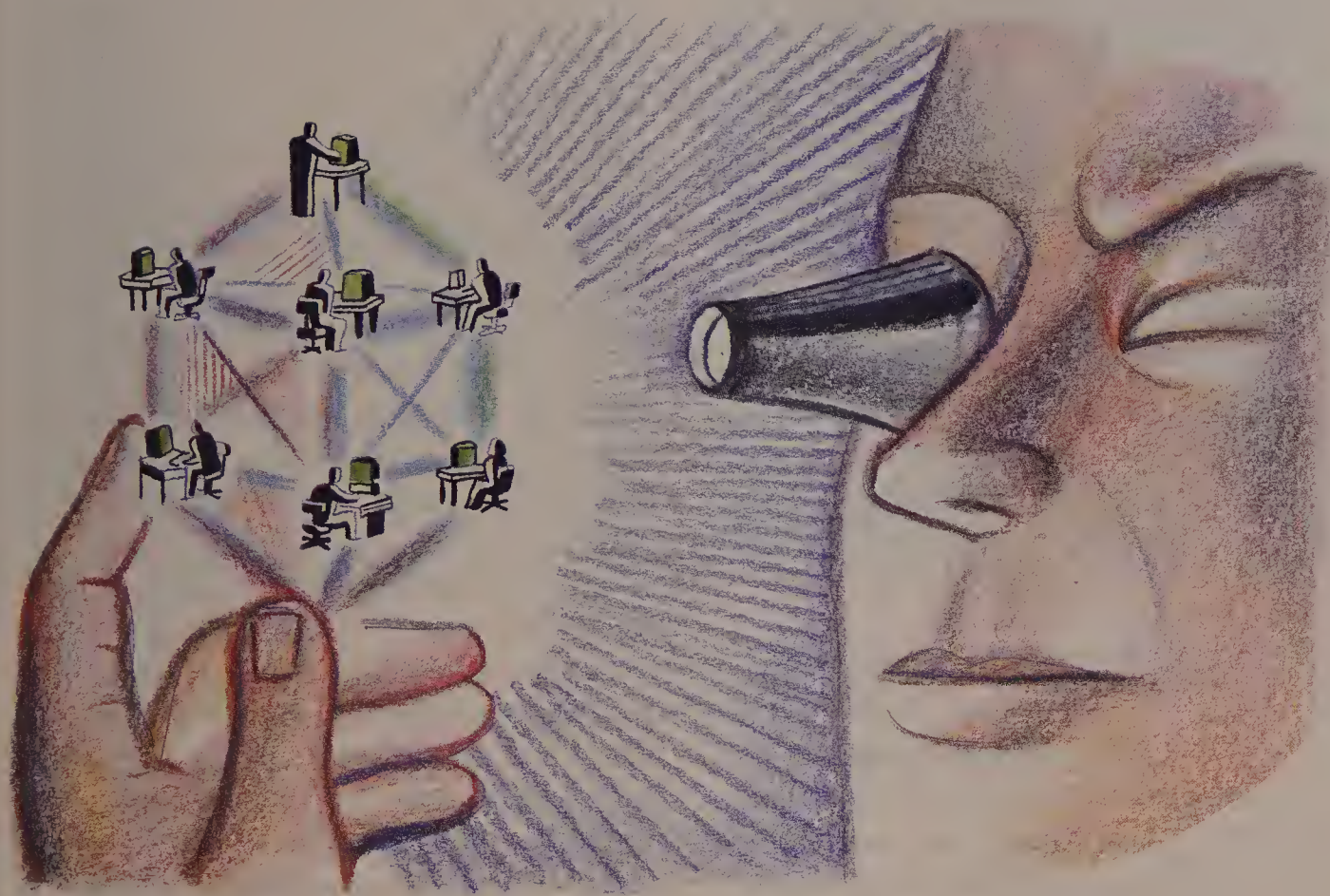
PC World has taken a close look at five of the most popular peer LANs: DCA's *10Net Plus 4.0.83*, D-Link's *Lansmart 1.14E*, Artisoft's *Lantastic 2.53*, Performance Technology's *Powerlan 1.2*, and Sun Microsystems' *TOPS 2.1*. All five are similar: They use menus to access network resources (but let you use the command line, or a batch file, if you prefer); and they let you guard sensitive data with password protection.

Performance is overrated as a server LAN buying issue; unless network traffic is exceptionally heavy, disk access speed, not LAN performance, is the limiting factor. With peer LANs, which are generally unsuitable for heavy-duty multiuser applications, speed is even less important (see the sidebar "Peer LANs: Who Needs 'Em?"). Nonetheless, all these LANs are fast enough for everyday computing.

To simplify product comparisons, all LANs have been priced in a standard ten-workstation configuration that includes software, ten of the company's least expensive adapter cards, and E-mail.

10Net Plus 4.0.83

DCA's *10Net Plus* comes packed with extras, including a strong E-mail package and real-time conferencing software. It offers securi-



ty and administrative features rivaling those of server LANs like *NetWare* and *3+Open*. But it falls short in three key areas: its relatively complicated setup and use, the less-than-average amount of RAM it leaves free for applications, and its price ($4950), among the highest in the roundup.

Like all the peer LANs reviewed here, *10Net Plus* follows a "host/client" model in sharing network resources. Hosts offer local resources, like a printer or a group of files, to the rest of the network. Clients use resources on a remote host. Any PC on the net can be a host, a client, or both; being a host uses up more RAM.

10Net Plus provides a series of crude but functional menus for sharing network resources. For instance, the Use Network Device menu shows prospective clients a list of host computers and the resources each offers. To use a resource, you highlight it, then tap a key to assign it a drive letter (if it's a directory) or an LPT port (if it's a printer). Unfortunately, not all network accesses under *10Net Plus* are this friendly. If you're running in host mode, the Share Network Device menu requires that you type in the designations of directories or printers you want to make available. Happily, good context-sensitive help is provided, because most users will need it.

With DOS 3.3 and all network software loaded, *10Net Plus* leaves host PCs with only 443K of usable RAM; you get a bit more (471K) in client-only mode. Considering that many applications require 512K, this below-average headroom may be a problem.

Installation is menu driven, but some of the settings are obscure, and you must follow the manual carefully to avoid confusion. And while the manual is clearly written, it's poorly organized.

10Net Plus's security and administrative features are unusually powerful for a peer LAN. In most peer LANs, password protection and read/write/create restrictions descend automatically to all subdirectories below a shared directory. But *10Net Plus* lets you set unique restrictions for each subdirectory, and even for individual files. Utilities are provided to help the network administra-

DAVID SUTER

EXECUTIVE SUMMARY

10Net Plus 4.0.83

LAN operating system

10Net Plus's administrative, security, and communications features are good enough to stand up against those of top server LANs. But it's high priced and relatively hard to use.

	POOR	FAIR	GOOD	EXCELLENT
Installation			●	
File and resource sharing			●	
Security and administration				●
Overall value			●	

Reader service no. 651

tor track network activity like file access and printer use.

10Net Plus comes with a generous bundle of communications software, including the *Network Courier* E-mail package, real-time conferencing for up to 40 users, a work-group calendar scheduler, and a network bulletin board.

10Net Plus is the only peer LAN whose security and administrative features are as powerful as those of high-end server LANs. But unless you need those features, you'll probably find *10Net Plus* unnecessarily hard to use, overly RAM hungry, and too expensive compared to other peer LANs.

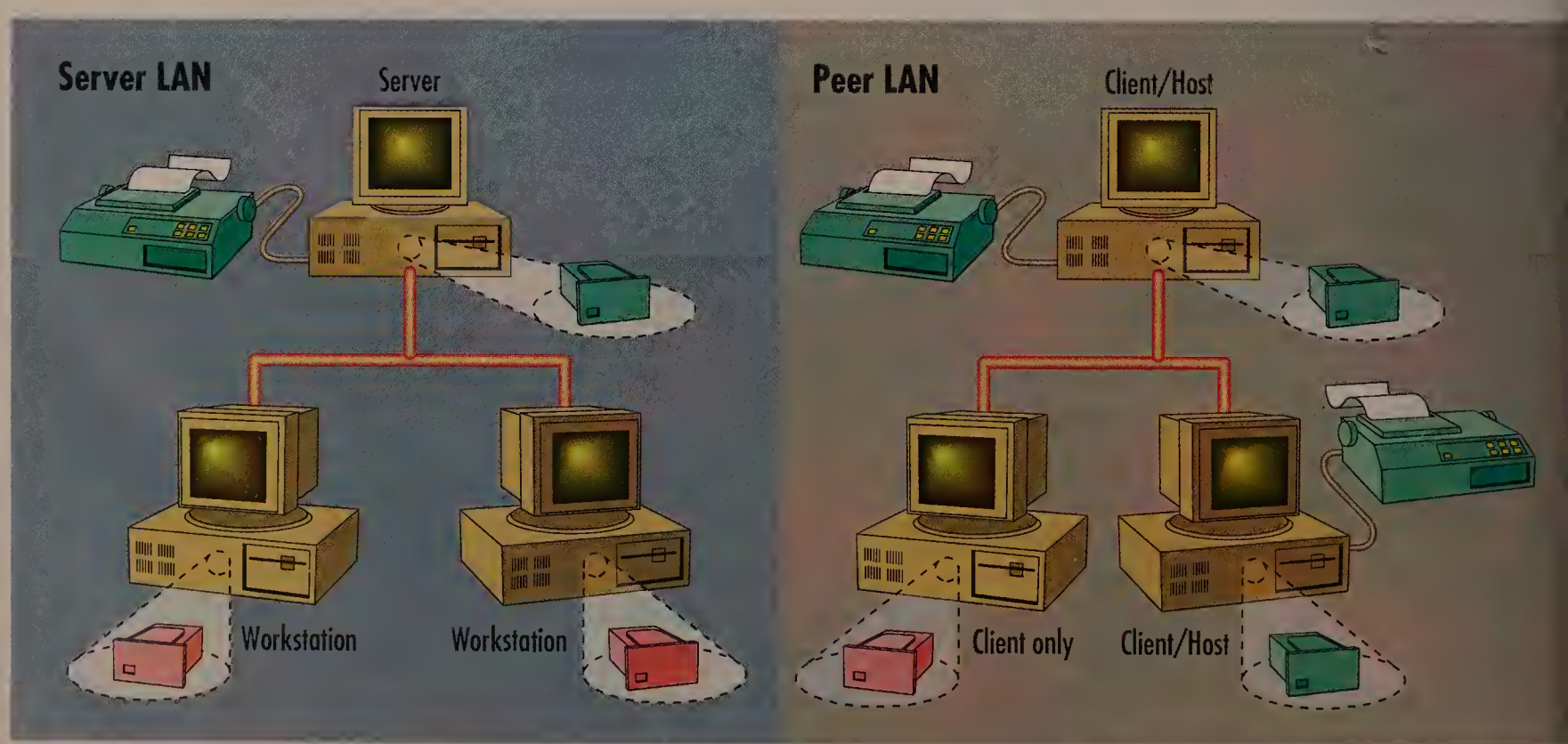
Lansmart 1.14E

D-Link's *Lansmart* is wonderfully easy to install, a treat to use, and (at $2980) one of the lowest-priced products in this review. You can even access *Lansmart* commands from within applications by running it in memory-resident mode.

Lansmart's pop-up interface is its biggest strength. Network menu choices are so descriptive and well organized that you may never notice the lack of on-line help. Whether you're sharing or using resources, you choose from a handy on-screen listing of available directories and printers. You can save your current set of resources so that they'll be loaded automatically the next time you start your PC.

The amount of available user RAM is average—which is to say not very good. You get 448K in host mode (barely sufficient for many business applications) and 518K in client mode. Moreover, if you run *Lansmart* in memory-resident mode, it gobbles an additional 80K of already scarce memory.

Share—But Not Alike



In server LANs, you can't access hard disks attached to other workstations (red)—the only shared resources are those on the server (green).

But in peer LANs, you can access any workstation's hard disk or printer (green), and it can access yours—provided you both choose to share.

EXECUTIVE SUMMARY

Lansmart 1.14E

LAN operating system

Lansmart's low price buys you an easy-to-use, easy-to-install, full-featured peer LAN package. However, the security and administration features are bare bones.

	POOR	FAIR	GOOD	EXCELLENT
Installation				●
File and resource sharing			●	
Security and administration		●		
Overall value			●	

Reader service no. 652

While *Lansmart* has no menu-driven installation utility, it's so easy to set up that you'll never miss the menus. The first time you log on, you'll be asked a few questions about the network board you're using and whether you want to be a host or a client. Thereafter, every time you start your PC you'll be asked whether you want to load *Lansmart* or not. That's all there is to it.

Administrative and security features are minimal. Options for protecting subdirectories are limited to assigning passwords and toggling read/write/create access. The manual is clear, complete, concise, and well indexed.

D-Link provides no software bundle, and its optional programs are disappointing. A bare-bones E-mail package has a nice text editor but can't send separate files as part of a message, and a remote-control troubleshooting utility is too slow to be practical.

Aside from the amount of RAM it needs and substandard E-mail, there's very little wrong (and a lot right) with *Lansmart*. Its price is low, its ease of use is exemplary, and despite the lack of menu-driven installation, setup is the easiest of any product in the roundup.

Lantastic 2.53

Artisoft's *Lantastic* is a fantastic deal. At $2517, it's the least expensive LAN reviewed, but its value is anything but low-end. Installation is painless, the user interface is a snap, and it offers the highest amount of workstation RAM in the roundup.

Lantastic's menus provide point-and-shoot access to resources, and clear context-sensitive help is just a keystroke away. If you run the program in host mode, the list of resources you offer is automatically saved and is reloaded every time *Lantastic* starts. (Unfortunately, resources used in client mode cannot be saved.)

With both DOS 3.3 and *Lantastic* loaded, you get a remarkable 542K of usable RAM in host mode and 564K in client mode. That's enough to run almost any business application, with enough left over for TSRs like *SideKick*.

PEER-TO-PEER LANS: WHO NEEDS 'EM?

Peer-to-peer LANs are particularly appropriate for small, independent, informal work groups whose members need to share data and are capable of protecting it themselves. Peer LAN partisans tend to find network security disruptive and network administrators intrusive.

If, however, a multiuser data base is one of your main business tools, a peer LAN may be inadvisable. There's no problem with several users' looking up information in the same file at the same time, but if multiple users need to *enter* information simultaneously, you'll need to use one PC as a dedicated file server to protect against data corruption. In addition, if many users try to make simultaneous entries, you will find out the hard way that peer LANs can't match *NetWare*'s high-speed performance under a heavy load. Finally, peer LANs lack advanced fault-tolerance features that give multiuser data bases extra protection from corruption.

Furthermore, working on a peer LAN can be slightly awkward. Shareable files may reside on any PC on the net, not merely on the server; if a given PC is not turned on, essential files may not be available. This also makes LAN-wide backup tricky. Finally, if you're running an application that resides on someone else's PC, and the host PC crashes, your PC may go down too. —*R. L.*

FEATURES EVALUATION

Fantastic Lantastic: Highest RAM at Lowest Price

Artisoft's low-priced Lantastic 2.53 delivers all the key peer-to-peer features: It's easy to install, offers menu-driven networking, and leaves much more usable memory than the others.

● Yes
○ Na
◒ Deficient

	10Net Plus 4.0.83	Lansmart 1.14E	Lantastic 2.53	Powerlan 1.2	TOPS 2.1
Standard features					
Price[1]	$4950	$2980	$2517	$5080	$5469
Installation					
Menu-driven installation	●	○	●	◒[2]	●
Connectivity					
OS/2 workstations	○	○	○	◒[7]	○
Mac workstotions	○	○	○	○	●
Usoble RAM in 640K host workstotion[3]	443K	448K	542K	466K	359K
Usable RAM in 640K client workstation	471K	518K	564K	520K	462K
Maximum number of stotions	unlimited	255K	unlimited	255	256
File and resource sharing					
Open files on host stations	●	●	●	●	●
Menu-driven network software	●	●	●	●	●
Context-sensitive help	●	○	●	●	●
RAM needed for TSR operotion	none[4]	80K	5K	42K-133K[5]	N/A
Sove resource connections on the fly	○	●	○	○	●
Moximum number of client drive/printer connections	26/3	26/3	26/3	26/5	10/3
Automatic network reconnect	○	○	●	●	○
Printing					
Shore printer ot host workstotion	●	●	●	●	●
Access print queue from within application	◒[6]	●	●	●	○
E-mail included	●	●	●	◒[7]	◒[7]
Scheduler included	●	○	○	○	○
Messaging	●	●	●	●	○
Share modem	○	◒[7]	○	○	○
Log-in vio modem	◒[7]	○	○	○	○
Security and administration					
User groups	●	○	●	○	○
Assign posswords to network resources	●	●	●	●	●
Restrict occess to individuol subdirectories of shored directory	●	○	○	○	○
Restrict creotion and deletion of files	●	●	●	●	○
Restrict execution of files	○	○	●	○	○
Limit number of users in subdirectories	◒[8]	○	○	○	○
Restrict occess to individuol files	●	○	○	○	○
Perform full network backup from workstation	●	●	●	●	●
Administrotive utilities	●	○	●	●	○

[1] Minimum price for ten stotians, including saftwore, campany's leost expensive adopter board, and E-mail.
[2] NETBIOS must be installed manually.
[3] With default settings unchanged, after laading DOS and LAN software and sharing one directary ond one printer.
[4] TSR can't manoge network resaurces; separate E-mail TSR tokes 78K (alarm anly: 12K).
[5] Con monage netwark printers but not directories.
[6] Cancel current jab anly.
[7] Availoble at extra cast.
[8] Restrict ta single user anly.

XEROX

Announcing the marriage of Forms and Database.

Introducing Xerox FormBase

Talk about a marriage of convenience: here's one software program that makes creating a database as easy as drawing a form.

We call it Xerox FormBase, because it combines a versatile forms program with a powerful database. As you create a form, FormBase automatically creates an underlying database to match. So you can build, store, and manage forms *and* data faster than ever before.

FormBase is powerful. In fact, there are virtually no program limits on the number of fields, the number of characters within a field, or the number of rows in a table.

FormBase is easy to use. It runs under Microsoft Windows, so you have the assistance of pull-down menus, dialog boxes, and function keys.

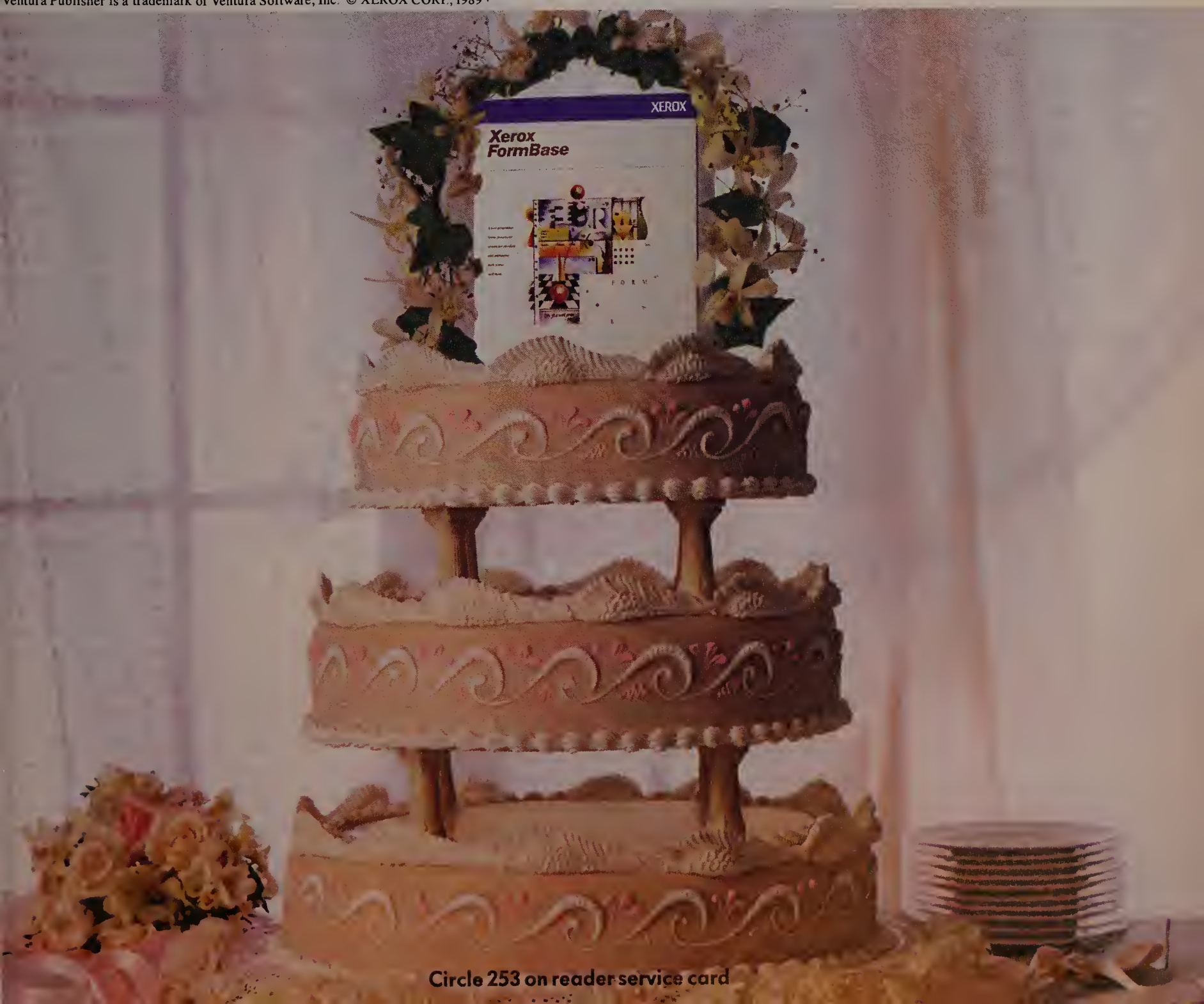
There are no languages, definitions, codes or indices to learn, because your forms are your interface to the database. Change your form and the database is restructured automatically.

FormBase redefines forms processing into an entirely new class of software. It's brought to you by Team Xerox, who brought you the internationally acclaimed Xerox Ventura Publisher.

So call **1-800-822-8221** (in Canada: 1-416-733-6589) for more information on how to put FormBase to work for you. Chances are, it will be a long-lasting relationship.

Team Xerox.
We document the world.

XEROX® is a registered trademark of XEROX CORPORATION. FormBase is a trademark of Columbia Software, Inc., Northridge, CA. Ventura Publisher is a trademark of Ventura Software, Inc. © XEROX CORP. 1989



Circle 253 on reader service card

Sometimes, you just can't copy an original.

With over 500,000 installations worldwide, Carbon Copy Plus™ is the leader in remote PC communications software. In fact, Carbon Copy Plus is used by twice as many people as any other remote software.

Why? Because Carbon Copy Plus is ideal for remote support, troubleshooting and training. With it, you can fix software problems over standard telephone lines from any remote location. The result is substantial savings in travel time and expense.

Carbon Copy Plus lets you access and control a remote PC to train a user or collaborate on a project. Both users view the same screen and keyboard input.

Its unique universal graphics translator converts incompatible graphics formats. Original CGA and VGA graphics images can now be replicated as EGA and Hercules images. What an original idea!

What's more, Carbon Copy Plus has become the #1 support tool for businesses with multiple locations to manage.

Carbon Copy Plus. You can't copy an original.

Our name is Carbon Copy Plus, nothing else is remotely close.

Microcom
SOFTWARE · DIVISION

For more information call or write:

Microcom Software Division 500 River Ridge Drive Norwood, MA 02062 617-551-1999

© Microcom, Inc. 1989. All rights reserved. Carbon Copy Plus is a trademark of Microcom Systems, Inc.

Circle 173 on reader service card

EXECUTIVE SUMMARY

Lantastic 2.53
LAN operating system

Lantastic gives you easy installation, a great user interface, and the highest RAM count in the roundup—all for a remarkably low price. *Lantastic*'s name is no exaggeration.

	POOR	FAIR	GOOD	EXCELLENT
Installation				●
File and resource sharing				●
Security and administration			●	
Overall value				●

Reader service no. 653

Installation is simple. A menu-driven setup program automatically loads and configures network software. The manual itself is a mixed blessing; its explanations are good, but it lacks an index and fails to explain some important features, like E-mail.

Lantastic provides a surprisingly powerful set of administrative tools. You can assign access rights to groups of users, and you can keep audit trails of network activity. You can even restrict file lookups (DIRs) and program execution.

Lantastic gives you an E-mail feature, but it's relatively crude—you'll probably want to buy a third-party program. Even so, *Lantastic*'s low price, painless installation, slick user interface, and minimal use of RAM hit all the key points, and hit them hard. It's a winning package—and a Best Buy.

Powerlan 1.2

Performance Technology's *Powerlan* is quite expensive ($5080), but it doesn't offer much in the way of advanced features. In fact, it's a lot harder to use and install than peer LANs that are far less costly.

Powerlan's interface is unnecessarily complex, with 11 different submenus. It's also the only peer LAN reviewed that makes you specify the location and network name of a resource before you can use it. The context-sensitive help doesn't add a great deal to what you see on the menus.

Installation is also overly complicated, and the manual doesn't help much; it's poorly written and disorganized and lacks troubleshooting tips.

With careful tuning (and hand-holding from your dealer), *Powerlan* can be tweaked to leave slightly more user RAM than the norm: 466K in host mode and 520K in client mode. But the default configuration leaves you with 20K less, and the documentation doesn't tell you how to improve on that.

Powerlan's security features are minimal. Your only options are password protection and the ability to restrict read/write/create permission.

BUYING SMART

The make-or-break features to keep in mind when choosing a peer LAN can be reduced to three: ease of installation, ease of sharing network resources, and amount of available workstation RAM.

Software installation should be much simpler and faster than with your average server LANs. Ideally, it should be handled by a menu-driven utility and require minimal tweaking afterwards. It should demand no prior knowledge of DOS, take no more than 5 minutes per station, and provide context-sensitive on-line help. If jumpers on the network boards need to be set or software parameters optimized for speed, memory, and so on, the process should be outlined clearly in the installation section of the manual.

Ease of sharing network resources means that clients should be able to pick remote hosts, drives, and printers from a list. Hosts should be able to access a similar point-and-shoot menu to choose which directories they want to share.

Peer LANs' appetites for memory vary widely—and your ability to run common business software varies with it. With DOS and network software loaded, these peer LANs leave you an average of 500K of usable RAM in client mode and 450K in host mode; some of the products reviewed leave you even less. If you use memory-resident E-mail, the memory drain becomes even more critical.
—*R. L.*

TOPS's appetite for RAM is by far the worst in the roundup.

EXECUTIVE SUMMARY

Powerlan 1.2

LAN operating system

This high-ticket LAN fails to deliver value to justify its price. The amount of usable RAM is a bit above average but not nearly as high as *Lantastic's*. Moreover, this LAN is hard to install, difficult to use, and equipped with only an average feature set.

	POOR	FAIR	GOOD	EXCELLENT
Installation			●	
File and resource sharing				●
Security and administration		●		
Overall value		●		

Reader service no. 654

No software is bundled with the LAN. If you want to pay extra, Performance Technology will sell you a copy of *cc:Mail*, an excellent third-party E-mail package the company guarantees will work with its software. Other options include network backup software and a disk mirroring utility.

Powerlan has the second-best memory size in the roundup, but *Lantastic* offers more memory—and more features—at less than half the price.

TOPS 2.1

Sun Microsystems' *TOPS* has been one of the most popular peer LANs on the scene for many years, thanks to its unique ability to connect PCs and Macs. Version 2.1 adds support for Ethernet and NETBIOS. Unfortunately (to quote TOPS technical support), it is "inherently just a memory hog," and at $5469 it is also the most expensive LAN in the roundup.

(At press time, we learned that Sun Microsystems is about to release *TOPS* version 3.0—a "radically different product" that seems to address many of the problems with version 2.1. Version 3.0, which should be shipping by the time you read this, will include printing, messaging, E-mail, and a full file-sharing system—and use only 80K in host mode.)

The excellent interface in version 2.1 is unchanged from the earlier version, with point-and-shoot resource selection in both host and client modes. Users can save their resource sets to batch files, which can then be loaded automatically. Context-sensitive help is, um, tops.

TOPS's appetite for RAM is by far the worst in the roundup. While clients get a passable 462K, if you want to share resources in host mode, you can end up with as little as 359K of usable RAM. If one of your applications needs NETBIOS, that eats another 47K. As a partial solution, you can switch from host to client mode without rebooting.

Worse yet, the new version seems a bit buggy. In our test, perfectly innocuous batch files occasionally froze the keyboard, and *WordPerfect* wouldn't grant a second user read-only access to an open file. TOPS acknowledged most of the problems and even had a patch for the *WordPerfect* glitch—but finding so many bugs is still troubling.

Installation is such a snap, you may never need to crack the thorough, easy-to-understand manual. A menu-driven utility even helps you configure your network adapter board.

TOPS's lack of administrative utilities may make you nervous. Security is limited to password protection and setting read-only or read/write access for shared subdirectories.

Optional software includes the *InBox*

EXECUTIVE SUMMARY

TOPS 2.1

LAN operating system

TOPS's ability to connect PCs and Macs is unique among the products reviewed, and its user interface is exemplary—but it gobbles far too much memory. Moreover, its high price and buggy upgrade are discouraging.

	POOR	FAIR	GOOD	EXCELLENT
Installation			●	
File and resource sharing		●		
Security and administration	●			
Overall value		●		

Reader service no. 655

IF YOU LIKED OUR AD, YOU'LL LOVE THE BOOK.

For your free Dell product catalog, write us. Or call 800-426-5150. In Canada, call 800-387-5752.

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone (Daytime): _____

Type of Business: _____

☐ Please have a Dell representative call me.

386 and 386SX are trademarks of Intel Corporation. ©1989 DELL COMPUTER CORPORATION.

1. Which products are you most interested in?
   A ☐ 286-based systems
   B ☐ 386SX™-based systems
   C ☐ 386™-based systems
   ☐ Other _____
2. How many PCs do you (your company) plan to purchase in the next year?
   _____
3. Is your requirement:
   A ☐ Immediate
   B ☐ 1-3 Months
   C ☐ 3-6 Months
   D ☐ 6-12 Months
   E ☐ Over 12 Months
   F ☐ Info only
4. Are you a (select one):
   A ☐ End user
   B ☐ Consultant
   C ☐ Reseller
   D ☐ Corporate Purchaser
   E ☐ DP/MIS Purchaser
   F ☐ Government Purchaser
   ☐ Other _____
5. How many PCs do you have installed now?
   _____

DELL COMPUTER CORPORATION

AD CODE 51DL9

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

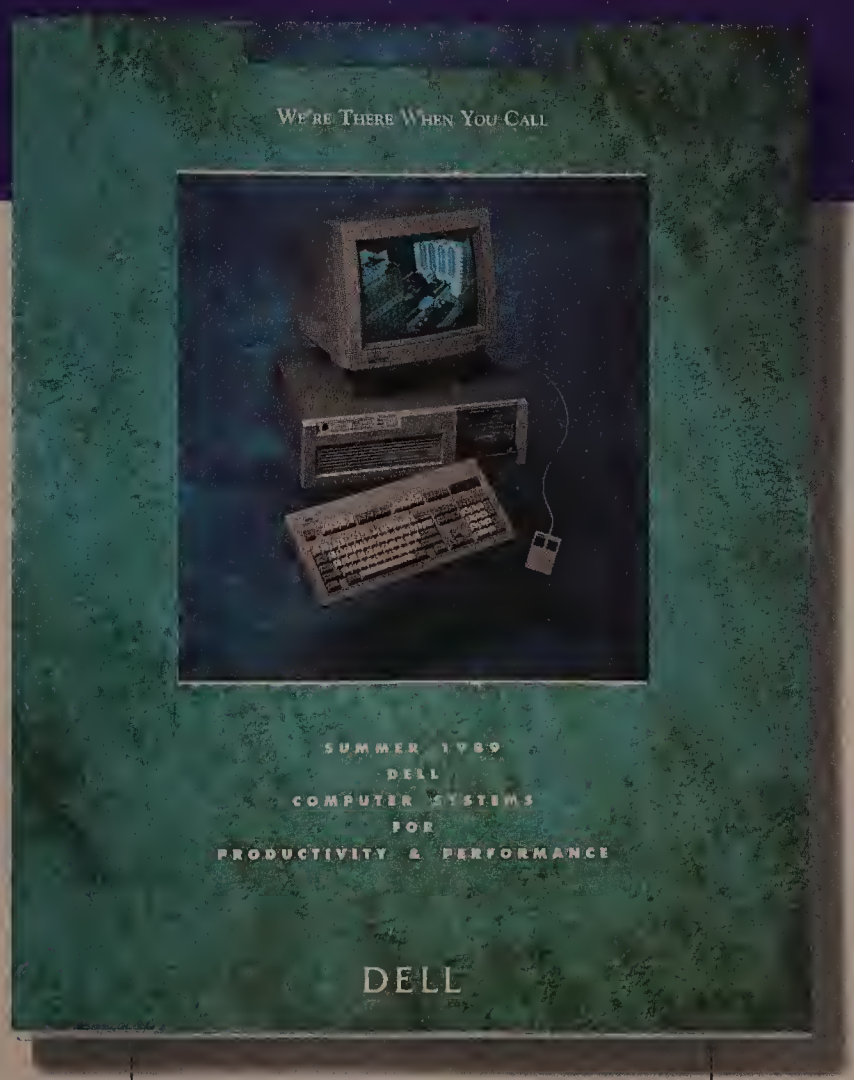
BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 6745 AUSTIN, TEXAS

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION
Dept. ME
9505 Arboretum Boulevard
Austin, Texas 78759-9969

SEND AWAY FOR YOUR VERY OWN COMPUTER STORE.



When you buy a computer, about 35% of your money goes to the store.

But we'd much rather see your money go to somebody who deserves it a lot more.

You.

So we give you a completely different kind of computer store.

The Dell Computer Store.

Instead of a crowded, high-overhead showroom, you get our brand new 44-page catalog. Which gives you a full line of 386™ and 286 systems, printers, peripherals, software, and accessories.

And since you buy direct from the manufacturer, you save about 35%.

But there's a lot more to it than saving money. We offer you the most complete service and support in the industry. Including a 30-day money-back guarantee. A toll-free technical support hotline. Self-diagnostic software. And next-day deskside service from Xerox Corporation.

If you read our ad in the front of this magazine, it will tell you a lot more about the systems we offer. And the service we put behind them. So if you'd like a much more intelligent way to buy a personal computer, have a look at our ad. Or call us at 800-426-5150. Or send us the card on this page.

And we'll send the best computer store you've ever seen.

One you don't have to set foot in.

DELL COMPUTER CORPORATION

TO ORDER, CALL US.

800-426-5150.

FOR DELL IN CANADA, CALL 800-387-5752.

©1989 Dell Computer Corporation. 386 is a trademark of Intel Corporation. ♪Service in remote locations will incur additional travel charges.

11DL9

Circle 318 on reader service card

E-mail package, which, while no match for top E-mail programs, covers the basics. If you use *TOPS*'s own FlashCard boards, the $189 *NetPrint* utility lets you print to an Apple LaserWriter or other AppleTalk-compatible printers.

Those who must have Mac-PC connectivity may be willing to put up with *TOPS 2.1*'s bugs and RAM gobbling. The rest of us will want to take a very close look at version 3.0.

Making a Peer LAN Plan

Users who want peer-to-peer capabilities plus powerful security features may find *10Net Plus* irresistible, despite its high $4950 price and awkward interface. On the other hand, if Mac-PC connectivity is a must, *TOPS* is your only choice among peer LANs —despite its stratospheric $5469 price tag. But for most peer LAN shoppers, easy-to-use *Lantastic*, with its come-hither combination of high workstation RAM and bargain-basement $2517 price, is simply impossible to beat.

With leading server LANs like *NetWare/386* including more and more peer LAN features, it seems clear that peer-to-peer networking is the wave of the future. Still, until peer LANs offer all the features found in top server LANs, they won't be right for everyone. But the reverse is also true: If you don't need server-based security, fault tolerance, or the ability to make simultaneous entries to a data base, why pay the proverbial arm and leg for them? Happily, with peer LANs like *Lantastic* and *10Net Plus* to choose from, you no longer have to. ●

Robert Lauriston is a San Francisco–based computer consultant who specializes in LAN and word processing installations.

For more information about all products in this article, circle reader service no. 911.

WHERE TO BUY

10Net Plus 4.0.83
Digitol Communicotions Associotes, Inc.
7887 Woshington Villoge Dr. #200
Doyton, OH 45459
800/358-1010,
800/782-1010 (Ohio),
513/433-2238
LIST PRICE: softwore only—single user $195, 8 users $795, unlimited users $2595; softwore ond hordwore bundles (per user)—StorLAN-compotible twisted-poir boord $495, Ethernet boord $695, 1-mbps proprietory fiber-optic boord $795, 10-mbps proprietory fiber-optic boord $1295
ACCESSORIES: oudio-visuol troining kit $105
REQUIREMENTS: 512K, DOS 3.1 or loter version
WARRANTY: one yeor ports ond lobor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll-free number, M–F 8:30–5:30
OTHER SUPPORT: BBS, fox, telex, regionol ond on-site troining
Reader service no. 651

Lansmart 1.14E
D-Link Systems, Inc.
5 Musick
Irvine, CA 92718
714/455-1688
LIST PRICE: softwore only (unlimited users) $395
ACCESSORIES: 1-mbps twisted-poir boord $249, Arcnet boord $245, 8-bit Ethernet boord $369, 16-bit Ethernet boord $465; D-Link E-moil pockoge $95; modem server $395; NetWore driver $95
REQUIREMENTS: 256K (512K recommended), DOS 3.1 or loter version
WARRANTY: one yeor ports ond lobor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll-free number, M–F 8–5
OTHER SUPPORT: BBS, newsletter
Reader service no. 652

Lantastic 2.53
Artisoft, Inc.
Artisoft Plozo
575 E. River Rd.
Tucson, AZ 85704
602/293-6363
LIST PRICE: storter kit (hordwore for 2 users ond softwore for unlimited users)—proprietory hordwore $525, Ethernet hordwore $725; odopter-independent softwore (up to 120 users) $495 (requires NETBIOS); oddition ol cord/coble sets —proprietory hordwore $249, Ethernet hordwore $349
ACCESSORIES: stor hub/repeoter $495; 50-foot duol twisted-poir coble $40, 100-foot duol twisted-poir coble $74
REQUIREMENTS: 256K RAM, DOS 3.1 or loter version
WARRANTY: one yeor ports ond lobor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll number, M–F 8–5
OTHER SUPPORT: BBS, EchoNet, newsletter
Reader service no. 653

Powerlan 1.2
Performonce Technology
800 Lincoln Ctr.
7800 IH 10 West
Son Antonio, TX 78230
512/349-2000
LIST PRICE: (softwore only) 4 users $595, 8 users $1195, unlimited users $1995
ACCESSORIES: 8-bit Arcnet boord $179, 16-bit Arcnet boord $695, 16-bit MCA Arcnet boord $795; cc:Moil $695; NETBIOS $50, site license $500; OS/2 Link $500; Powersove $495; Powerserve $1995; Novigote $150; Powerlon for unlimited users plus NETBIOS, Powerserve, Novigote $2595; some plus Powermirror, Powersove $3495
REQUIREMENTS: 256K, DOS 3.1 or loter version (3.3 recommended)
WARRANTY: 90 doys ports ond lobor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: none
OTHER SUPPORT: through deolers, E-moil for lorge occounts
Reader service no. 654

TOPS 2.1
Sun Microsystems, TOPS Division
950 Morino Villoge Pkwy.
Alomedo, CA 94501
415/769-9669
LIST PRICE: (softwore only) $189 per stotion
ACCESSORIES: Flosh-Cord $239; Teleconnector $59; repeoter $189; TOPS for Moc $249 per stotion; NetPrint $189 per stotion; InBox for PC $599 per LAN, InBox for Moc $249 per LAN, InBox PC-to-Moc $99 per PC
REQUIREMENTS: 512K (640K recommended), DOS 3.1 or loter version
WARRANTY: one yeor ports ond lobor
EXTENDED WARRANTY: none
TECHNICAL SUPPORT: toll number, M–F 7–5
OTHER SUPPORT: BBS, BIX
Reader service no. 655

SAMPO Announces:

Big Is Better By Definition.

Now SAMPO® makes BIG-screen monitors affordable for everybody.

Because in monitors, bigger is better. For virtually any graphics application. CAD/CAE. Desktop publishing. Presentation graphics. Microsoft® Windows. Even business applications like spreadsheets and word processing.

SAMPO'S new line of highly affordable 20-inch monitors can put the BIG picture on any desktop.

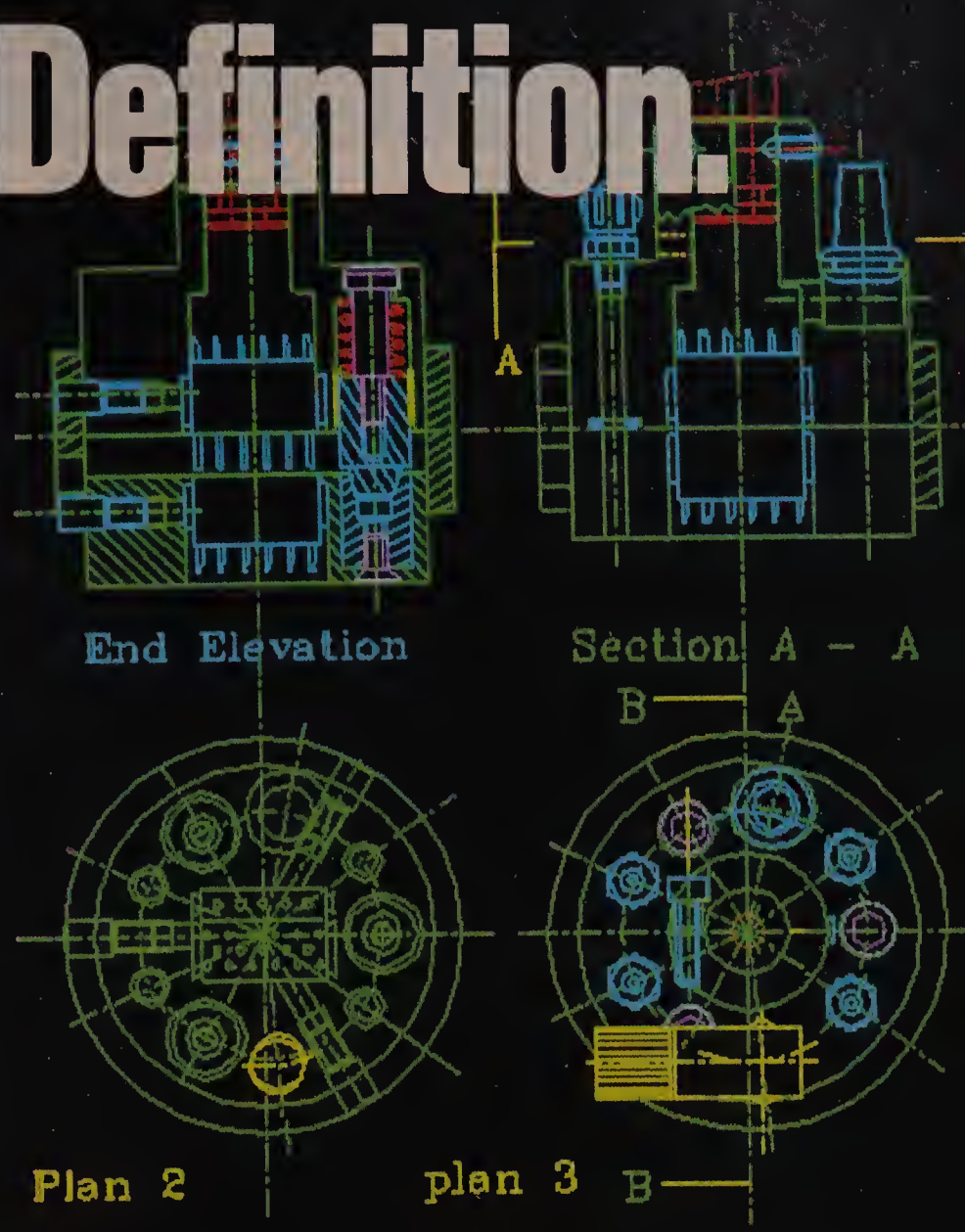
From our innovative 20-inch **TriSync**™—the first color VGA®/8514A®/Mac™ II compatible monitor priced under $2,000.*

To our 20-inch **PrismView**™—the dedicated 1280x1024 resolution CAD monitor that delivers the BIG picture, without the BIG price.

And our 20-inch **OfficePRO**™ series—the first two-page monochrome and grey scale monitors for desktop publishing and scanning applications starting under $1,000.*

Bigger and better monitors for everybody.

See us at Fall COMDEX booth 103.



SAMPO/TriSync

SAMPO
A M E R I C A

5550 Peachtree Industrial Blvd.
Norcross, Georgia 30071
(404) 449-6220
Fax: (404) 447-1109

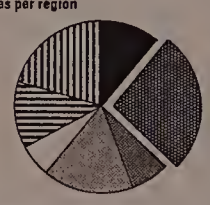
*Manufacturer's Suggested Retail Price. SAMPO is a registered trademark and TriSync, PrismView and OfficePRO are trademarks of SAMPO Corporation of America. Mac is a trademark of Apple Computer, Inc. VGA/8514A are registered trademarks of IBM Corporation. Microsoft Windows is a registered trademark of Microsoft Corporation.

Circle 255 on reader service card

If you want better word processing, don't settle for Perfect.

REPORT TO THE FIELD

Sales per region



Northwest · Southwest · Northeast · Southeast · East · West · Midwest

The following are the most recent Telex numbers for the Arbor regional sales offices. All client and distributor inquiries should be directed to these numbers.

Los Angeles	06785
Atlanta	05786
Chicago	07658
New York	08657
Miami	05876
Detroit	06875

Shoe enough

Arbor Footwear comings and goings: Jim Dearing becomes V.P. Design for Arbor Evening and Dress wear. Greg Vroonas moves from Peoria to marketing in Miami. Joan MacArthur and Lisa Doan become account supervisor and media planner, respectively. *1 Ridgley C.*

Sales per region

Across the board it looks like the South once again led sales in FY '88. With the continuing pump craze those figures should maintain, if not improve. *2 Jim W.* It's important not to let the other areas such as Northeast and Midwest fall.

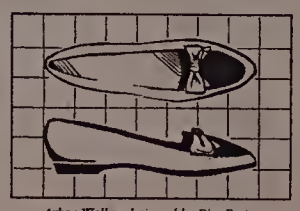
Style:	Dress	Sport	Career	Casual
	Evening eel	Weekender	Tailor made	Trouser tip
	Midnight moccasin	Kickaround	Ladies wingtip	Loafer
	Twilight toeless	Runner up	M.B.A.-bound	Special spectator
Price:	$150-$350	$85-$125	$120-$250	$90-$150

Young professionals use Arbor Walker to commute.

Soon, young professional women will no longer be using Arbor shoes simply to climb the corporate ladder. They'll be using them to get there.

This fall we're introducing the Arbor Walker — a shoe that goes quite a few steps further than the now-accepted but unattractive tennis shoes women have been wearing to and from work.

Made of Italian leather with a rubber sole, the Arbor Walker is the perfect combination of style and durability.



Arbor Walker designed by Pier Besto.

Look for promotional materials and carrying cases in early September. Our sales point is: "Women don't have to sacrifice looks for comfort."

SALES FORECAST FOR 1989 — Types of shoes: Summer/Fall/Holiday/Spring

	1st quarter	*2nd quarter*	*3rd quarter*	*4th quarter*
Dress	95,000	87,000	120,000	60,000
Career	40,000	82,000	60,000	90,000
Casual	120,000	85,000	75,000	80,000
Sport	135,000	60,000	90,000	87,000
TOTAL:	390,000	314,000	345,000	317,000

1 Ridgley C., 9/27/88, 4:32 PM
let's discuss forecast for media department expansion.
2 Jim W., 7/1/88, 1:15 PM
Figures for Northeast and Midwest should be calculated separately mid-month let's catch them before they fall with promo.

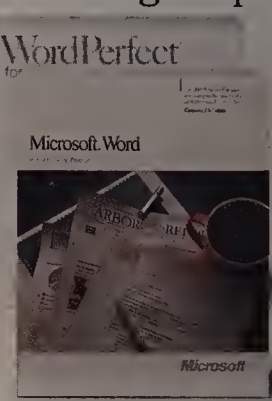
Text, graphics, fonts, annotations. Faster, simpler, cleaner. Compliments of new Word 5.0.

The trouble with WordPerfect® is, sometimes it isn't.

Not when you compare it to our new Microsoft® Word version 5.0. Not when you consider that with Word 5.0, you'll be able to pump out your day-to-day jobs quicker, easier, even smarter than you ever thought possible.

For example: With Word 5.0 you can choose commands by either using simple speed keys or just selecting from a menu.

You can create documents with about 50% fewer keystrokes than you-know-who. And now enjoy even more true WYSIWYG (What You See Is What You Get) thanks to our Print Preview.



Introducing new Microsoft Word 5.0. When Perfect just isn't good enough.

Does WordPerfect give you the freedom to make annotations? Nobody's perfect. Does WordPerfect feature Outline View? Another imperfection.

New Word 5.0 also lets you list, search and archive files across multiple directories. And even link part, or all, of a Lotus® 1-2-3,® Microsoft Excel or Microsoft Works spreadsheet into a Word document. And then update it. All in a matter of seconds.

COMMON WORDPROCESSING TASKS		
Which requires fewer keystrokes?	Microsoft Word 5.0	WordPerfect 5.0
Copy Block	4	7
Delete Line	2	4
Italicize Word	2	5
Change Font and Size	6	9
Add Footer	1	7
Box Paragraph	5	12
Total	20	44

With new Word 5.0 you'll do about 50% less hunting and pecking than with WordPerfect.

★★★★	8.4	Microsoft Word
★★★★	8.1	WordPerfect

Software Digest recently chose the best overall advanced word processor on the market. Who won? In a word, Word.

Which one brings your word processing closer to perfection?

Microsoft®
Making it all make sense®

Output printed by the Hewlett-Packard® LaserJet Series II® printer. Customers in Canada, call (416) 673-7638. Outside North America, call (206) 882-8661. © Copyright 1989 Microsoft Corporation. All rights reserved. Microsoft, MS-DOS and the Microsoft logo are registered trademarks, and *Making it all make sense* is a trademark of Microsoft Corporation. Hewlett-Packard and LaserJet Series II are registered trademarks of Hewlett-Packard Company. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. WordPerfect is a registered trademark of WordPerfect Corporation. Software Digest rating from April 1989 issue. This offer valid only in the 50 United States.

WINDOWS

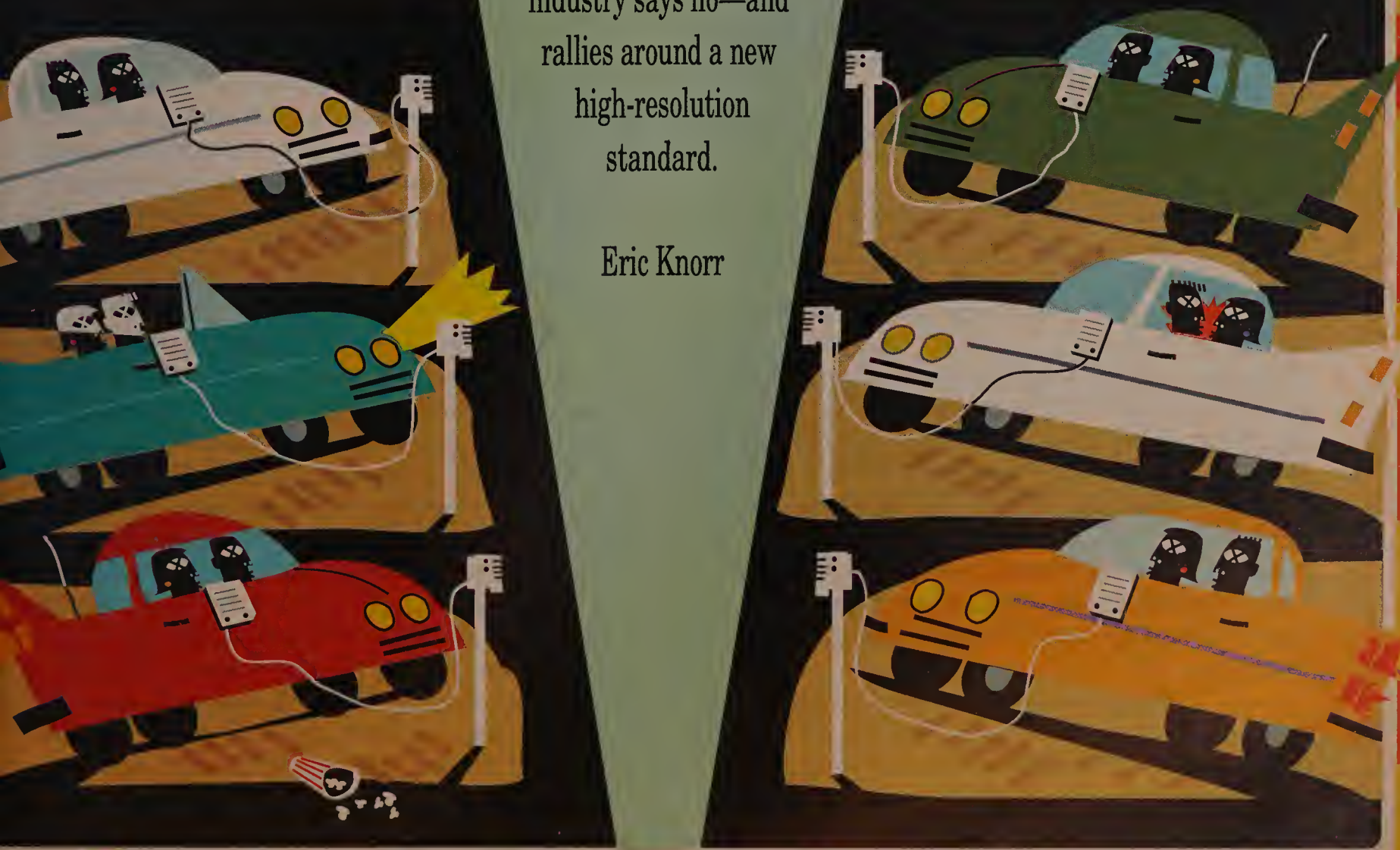
A PC WORLD SUPPLEMENT ON WINDOWING ENVIRONMENTS AND APPLICATIONS

EDITED BY ROBERT LUHN

IMAGES FOR THE '90s

Is VGA resolution sharp enough and are VGA monitors big enough for a Presentation Manager future? The industry says no—and rallies around a new high-resolution standard.

Eric Knorr



Working with *Windows* or Presentation Manager (PM) on a 12-inch screen has its drawbacks. Rather than spend time maximizing and minimizing windows, wouldn't you rather have a screen that's big enough to accommodate several applications in open, usable windows simultaneously?

Sure you would. And rest assured that the industry, beginning with IBM, has anticipated demand for displays so large they take much of the window shuffling out of multitasking. IBM's 8514 monitor measures 16 inches diagonally and, when driven by the 8514/A graphics board, offers 1024 by 768 resolution—nearly 65 percent more viewing area than the typical VGA setup and more than 2½ times the pixels. In practical terms, that adds up to about twice the space for open windows.

IBM introduced the 8514/A in 1987, when CAD and desktop publishing were the only applications that needed it. But that was before PM. Now nearly every graphics hardware vendor is working on its own 1024 by 768 board, in the hope that PM will catch on and cause an upgrade frenzy.

At 1024 by 768, you need the power of a processor like the 8514/A's; in a fast PC, a VGA controller running at 1024 by 768 (in one of the proprietary "super VGA" modes provided with many VGA boards) causes a bottleneck. Most graphics hardware companies are working on 8514/A clones, while several—including NEC, Dell Computer, Vermont Microsystems, and Compaq/Renaissance GRX—have released boards based on Texas Instruments' 34010 graphics coprocessor. Software written specifically for one type of board won't run on the other, but both will be compatible with PM and, of course, any application written for the environment.

The key role of PM is clear. As long as software developers write for PM and graphics hardware engineers provide PM drivers, any PM application will drive any display at its maximum resolution. If PM becomes the mainstream business computing environment, we'll exchange shuffling through setup menus and fiddling with drivers and DIP switches for plug-'n'-play convenience.

Another Cost of OS/2?

To the multitudes who use EGA or VGA hardware, the prospect of yet another graphics upgrade is discouraging—especially after a look at IBM's prices. Shell out $1550 for the 8514 monitor, $1290 for the 8514/A board, and an extra $270 for enough RAM to display 256 simultaneous colors at full resolution, and you could have bought a fully loaded 286 for the same $3110.

Fortunately, IBM has competitors. The general industry consensus is that the cost of large-screen, 1024 by 768 graphics must drop to a street price of around $1000 for both board and monitor before business people upgrade en masse.

According to Greg Reznick, vice president of systems marketing for Headland Technology, the price of a 16-inch monitor bundled with a 1024 by 768 board will drop to the magic $1000 mark "by the end of 1990"—and many other industry leaders agree. Headland, Western Digital Imaging, Chips and Technologies, and Integrated Information Technology are all working the board side of the equation by developing low-cost chipsets compatible with IBM's 8514/A.

The monitor in the hypothetical $1000 bundle is, like IBM's 8514, an *interlaced* monitor. This means that its electron guns first draw the even scan lines of a video image and then go back to fill in the odd scan lines, instead of the faster single pass executed by the guns in a *noninterlaced* monitor. Interlacing drastically reduces the cost of monitor electronics, but the trade-off is either flicker or streaking, depending on the type of screen phosphor used.

Unlike IBM, NEC Home Electronics doesn't believe you should accept the compromise of interlacing. The company's new MultiSync 4d and 5d monitors offer 1024 by 768 (or better) resolution without interlacing, and they should be shipping by the time you read this. The 19-inch MultiSync 5d targets CAD and desktop publishing applica-

GORDON STUDER ILLUSTRATIONS CREATED WITH COREL DRAW

tions, but the 16-inch 4d is clearly aimed at the PM environment. Unfortunately, the noninterlaced circuitry drives the 4d's price $250 higher than that of IBM's 8514.

Along with its new monitors, NEC is also offering the MultiSync Graphics Engine, a 1024 by 768 board that centers on the 34010 graphics coprocessor. Although software written directly to 8514/A hardware won't run on the board, the resolution and color selection match those of IBM's 8514/A. The board also provides special speed-up logic for PM.

Forging an Interim Standard

The universal software/hardware compatibility offered by PM—known as device independence—is still a long way off. Robert Dickinson, vice president and general manager of WDI, hazards that "we're a generation or two away—say, late 1991."

Meanwhile, in the transitional period before PM takes hold, people considering a 1024 by 768 display must determine whether their favorite software can drive it at full resolution. Thanks to the Video Electronics Standards Association (VESA), which recently published the 8514/A's hardware specifications so programmers could write to it, boards compatible with IBM's 8514/A should have better support from today's software than 34010 boards do.

Of course, software vendors may still take their time supporting either standard. That's why NEC added a complete VGA chipset to the MultiSync Graphics Engine, making it backward compatible with software written for the VGA, EGA, Hercules, CGA, and MDA boards. All that logic raises the price, though, to a whopping $1499.

IIT is also following this one-size-fits-all strategy, but on the chip level. The company claims its Integrated Graphics Controller chip will be register-level compatible not only with the 8514/A but also with the VGA, EGA, Hercules, CGA, and MDA. "Our objective is to drive the 8514/A market," says Gene Parrot, vice president of sales and marketing. "We believe our customers will be able to sell backward-compatible 8514/A boards for $799 or less." These boards could be sold as VGAs for as low as $599; to upgrade to 8514/A capability, you would merely add the RAM necessary for 1024 by 768 resolution.

That's an affordable solution as far as the boards go, but the biggest cost will be the monitor, and here we have a classic catch-22. The manufacturing cost of 16-inch CRTs will plummet only when vendors sell a lot of them, but demand won't peak until the prices fall.

Is this monitor the wave of the future? NEC's 16-inch MultiSync 4d has the resolution and screen area to make multitasking sing.

VGA Versus 8514/A: Highest Modes Compared

With over 2½ times the pixels, the 8514/A delivers a far crisper display than the VGA can.

	VGA	8514/A
Graphics		
resolution (horizontal by vertical)	640 × 480	1024 × 768
total pixels	307,200	786,432
on-screen colors	16	256
palette size	262,144	262,144
Text		
characters (columns by lines)	80 × 30	146 × 51
character matrix (horizontal by vertical)	8 × 16	7 × 15

The industry is banking on PM users' lust for elbow room: Only then will they feel compelled to upgrade to the bigger screen. As with so many other things—including device independence—the next step in graphics depends on how many of us find PM irresistible.

Eric Knorr is a senior editor for PC World.

Now you can enjoy the power of CROSSTALK® and the convenience of Microsoft® Windows at the same time. CROSSTALK for Windows is the first full-featured, full-powered communications program designed specifically for Windows. We put our 10 years of experience with PC communications software to work in order to give you all the features Windows users have asked for, including:

Crosstalk for WINDOWS

Integrated "phone book" of frequently-called computers allows you to save and recall all settings for any host computer.

True "background" operation under all versions of Windows lets you transfer files while working in other applications.

Emulation of DEC® VT102™, IBM® 3101, ANSI, and CompuServe® VIDTEX℠ terminals.

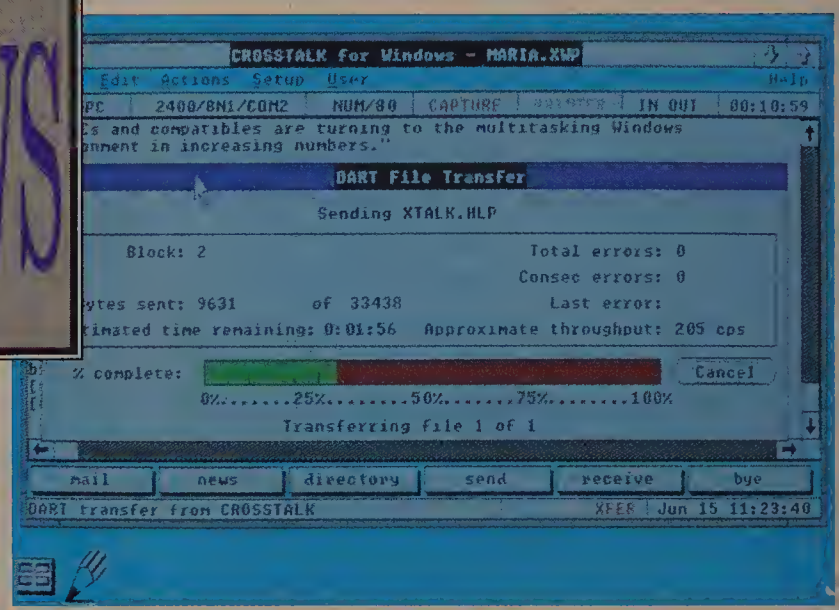
Cut and Paste data between CROSSTALK and any other Windows application.

Full-feature file transfer support including CROSSTALK, DART, XMODEM, YMODEM, ZMODEM, Kermit, and CompuServe B℠ protocols.

A powerful programming language, based on CROSSTALK Mk.4's CASL™ language. Programming tools are provided for Windows-specific tasks like creating dialog boxes and executing DDE functions.

48 user-programmable function keys for one keystroke operation of host responses or "scripts". In addition, the function keys can be invoked by a customized pull-down menu selection or by clicking on-screen icons with the mouse.

Capture host data to printer or disk file, with "playback" of captured host sessions.



Full support for all modems, including high-speed, error-checking modems like the Hayes® V-Series, US Robotics HST™, Telebit Trailblazer®, and others.

If you use Windows, you need CROSSTALK for Windows. See your software dealer.

CROSSTALK

CROSSTALK COMMUNICATIONS
1000 Holcomb Woods Parkway
Roswell, Georgia 30076-2575
404/998-3998

A Division of Digital Communications Associates, Inc. DCA®

CROSSTALK and DCA are registered trademarks of Digital Communications Associates, Inc.
Other trademarks appearing in this advertisement are trademarks of their respective companies.

Circle 57 on reader service card.

AMI GOES PROFESSIONAL

Powerhouse word processing comes to Windows.
George Campbell

The gap between word processing and desktop publishing is growing paper-thin. High-end programs like *Microsoft Word 5.0* and *WordPerfect 5.0* offer graphics integration, fonts, and page preview modes that edge onto *Ventura Publisher*'s turf. But tapping these features takes some doing. If you need high-test word processing seamlessly merged with facile desktop publishing tools, the answer may lie with *Windows* programs such as Samna's *Ami Professional*.

Although it matches *Word* and *WordPerfect* feature for feature, *Ami Professional* is often much easier to use. Thanks to its typographic tools, point-and-drag graphics manipulation, and *Ventura*-like frames and style sheets, it could be the only publishing program you'll ever need.

The prerelease copy examined here was about 95 percent complete, offering a solid look at what's to come. As you might expect, *Ami Professional* preserves *Ami*'s menu- and icon-driven interface, keyboard shortcuts, formatting aids, spelling checker, and easy graphics handling, supplementing them with a panoply of heavy-duty word processing features. The mail merge feature now lets you insert field names from a menu instead of having to type them into a mail merge letter. Need to build a table of contents or an index? Just mark the desired text with the mouse and select a single menu option. A complete document summary sheet plus pop-up Post-it–style notes allow easy group editing and tracking of revisions. And unlike *Word*, with its cumbersome style sheets, *Ami Professional*'s formatting is applied by simply highlighting text and selecting a style from an on-screen box.

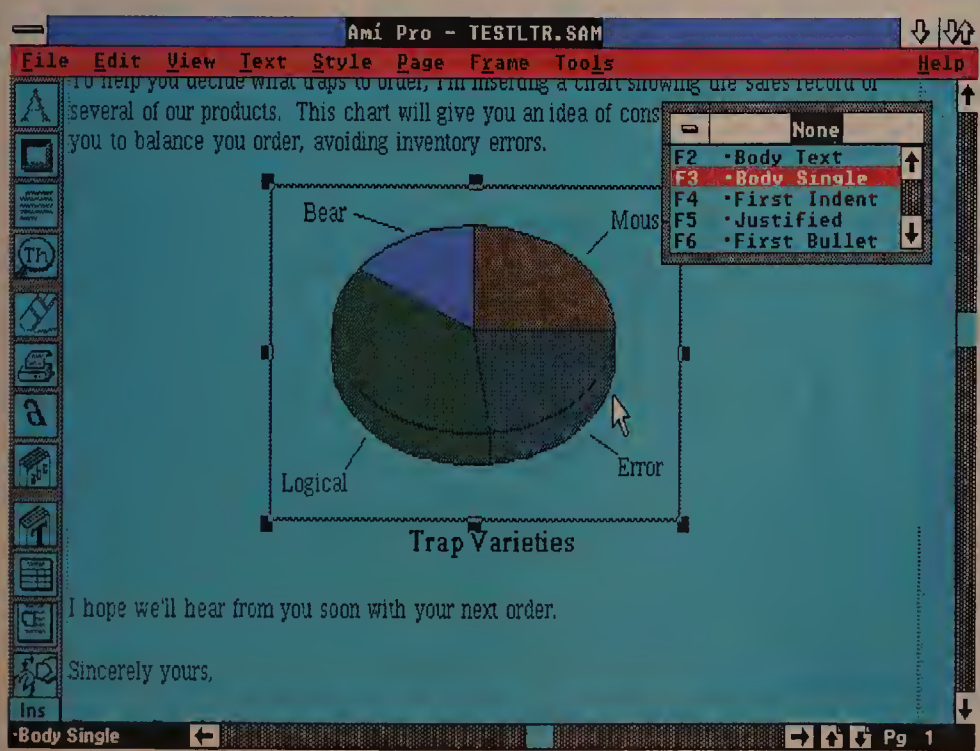
Like any advanced word processor, *Ami Professional* lets you record keyboard macros (and mouse-selected commands) and play them back. Boilerplate text can be stored in glossaries, and there's a 40,000-word thesaurus that even provides dictionary definitions.

Two hot features you won't find in most word processors will win many converts. The first is a table generator that Samna claims will take typed data or *1-2-3*, *Excel*, or *dBASE* files and transform them into a *1-2-3*-style table you can drop into a document. The second is a snazzy built-in business charting function that offers six types of graphs with color and 3-D variations. You can also import .PCX, TIFF, .PIC, and *Windows Paint* images and import and export formatted *Word*, *WordPerfect*, and *WordStar* files.

Ami Professional supports one-way DDE links to other *Windows* applications. You can easily create a sales report with numbers tied to a range in an *Excel* worksheet; change the worksheet, and the document will be updated automatically.

Samna's new *Ami* could be one of those programs that spurs users to move to *Windows*. Just remember that the package will cost $495 and probably require a *fast* 80286 computer at the very least. A run-time version of *Windows/286* will be included with the program when it ships at the end of 1989.

George Campbell regularly contributes articles to PC World *on word processing and telecommunications software.*



You can use Ami Professional's charting feature to add punch to otherwise humdrum documents. Full control of chart labels and legends is one of the promises.

Ami Professional
Samna Corp.
5600 Glenridge Dr.
Atlanta, GA 30342
800/831-9679, 404/851-0007
Reader service no. 604

COMMUNICATIONS, THE MAC WAY

A popular Mac communications program comes to Windows—and may find the going rough.

Judy Getts

In the Mac world, Software Ventures' *MicroPhone II* gets high marks for its slick background file transfers, powerful script language, high-speed modem support, and a learn mode that lets novices build log-on scripts easily. These features will now appear in the *Windows* version of the product, but they might not be enough. Established competitors like *DynaComm* offer a complete set of modem controls and protocols, while newcomer *Crosstalk for Windows* assembles *Mk.4*-like powers behind a friendly face. Will *MicroPhone II* be able to compete?

Not right away. Based on our examination of a prerelease version and interviews with the company, the first release of *MicroPhone II* will be short on error-checking protocols and terminal emulations, and it won't support *Windows'* DDE. According to the manufacturer, no planned version will include a text editor or on-line help.

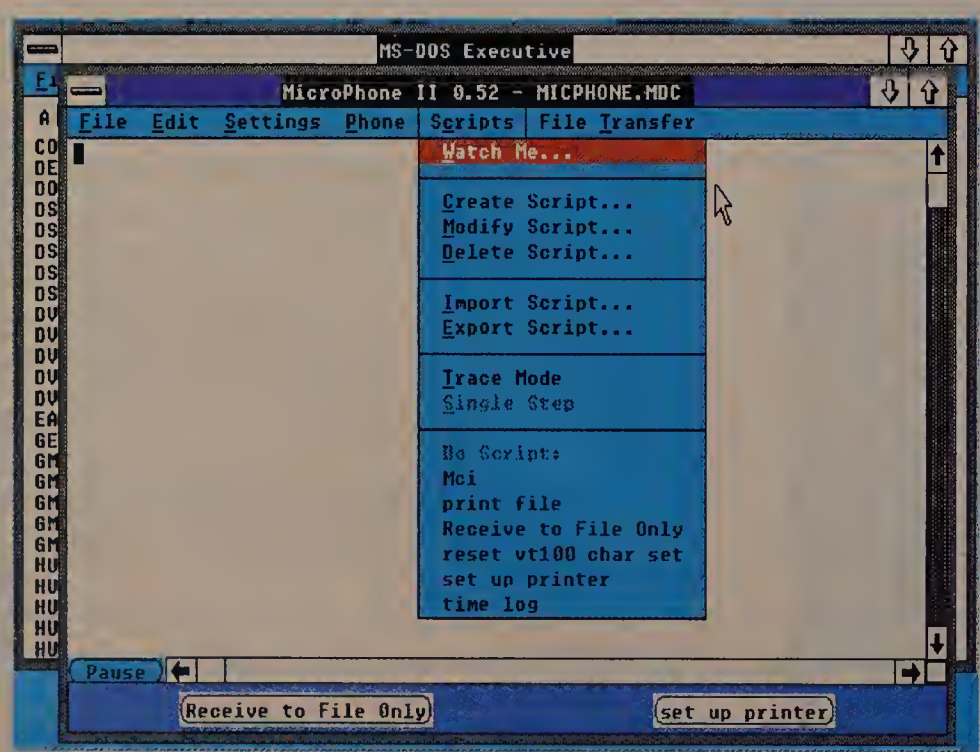
Some users may also chafe at the lack of a central dialing directory, but sending and downloading files is rather simple. As in *DynaComm*, related functions are grouped under a handful of menus. Flip open the Phone menu, for example, and you can dial, wait for a call, or run scripts with a few mouse clicks. Toggling from a *MicroPhone II* session to another application takes a single click; *MicroPhone II* will neatly perform file transfers in the background while you work away.

Configuring *MicroPhone II*, however, won't be so simple. Phone numbers are stored in "documents" that are shackled to a single set of communications parameters. Thus, if you wanted both 1200-bps and 2400-bps settings for MCI Mail, you'd have to create two documents. Changing modem settings is even stickier. You must select the Import Script function, choose from a list of inscrutably named modem drivers that control specialized functions, such as hanging up the phone, and import the script.

MicroPhone's Pascal-like script language is likewise geared for skilled users—and you'll have to master it to do more than basic file transfers. Once you're proficient, you'll find that scripts can fetch MCI mail, automate file transfers, run unattended communications sessions, and turn your PC into a BBS. If you mostly log on to on-line services, you can turn to *MicroPhone*'s Watch Me function, which will record your keystrokes (complete with a remote system's responses) for easy playback. *MicroPhone* will also include prefab scripts for CompuServe, MCI, EasyLink, and other services.

But such powers may not satisfy bread-and-butter communications users when *MicroPhone II* is released at the end of 1989 for $295. The program will include only XMODEM, 1K XMODEM, YMODEM, and YMODEM-G error-correction protocols, and VT-52 and VT-100 terminal emulations. *Windows* buffs will be disappointed as well, since DDE support is down the road. Software Ventures plans to beef up the program in future releases. When it does, *MicroPhone II* could be a strong contender.

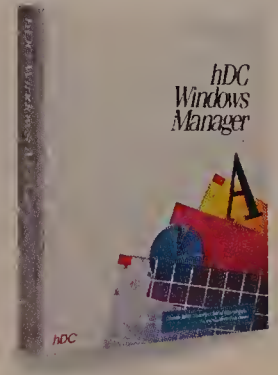
Judy Getts is a contributing editor for PC World.



MicroPhone's Watch Me feature is a telecommunicator's blessing. It will "watch" as you log on to an on-line service, then replay your keystrokes to automatically log you on to the service the next time you call.

MicroPhone II
Software Ventures Corp.
2907 Claremont Ave. #220
Berkeley, CA 94705
415/644-3232
Reader service no. 607

Introducing hDC Windows Manager and MicroApps. The Windows-enhancing, desktop-customizing, file-saving, work-organizing, memory and font viewing, appointment-reminding utility for Microsoft Windows.



At last, pop-up utilities come to Microsoft Windows.

Microsoft® Windows has a lot of advantages. But until now, pop-up utilities haven't been one of them. hDC Windows Manager™ changes that by letting you install, configure, and manage convenient Windows utilities and productivity tools called MicroApps™.

You can access MicroApps instantly from any Windows application. The seven MicroApps that come with Windows Manager do everything from automatically save your work to enhance your Windows system. For instance, use MicroApps to create your own customized screen saver—or use one that's provided. Find out how your computer is using memory. Create sets of programs and files you work with together—then launch them all with a single command. Customize your Windows background pattern. Look at samples of your printer fonts. And that's only the beginning, because Windows Manager also prepares you for MicroApps that are released in the future.

Best of all, you get all this convenience for an introductory price of just $79.95. Windows Manager. It lets you get more out of Windows because it lets you put more into Windows.

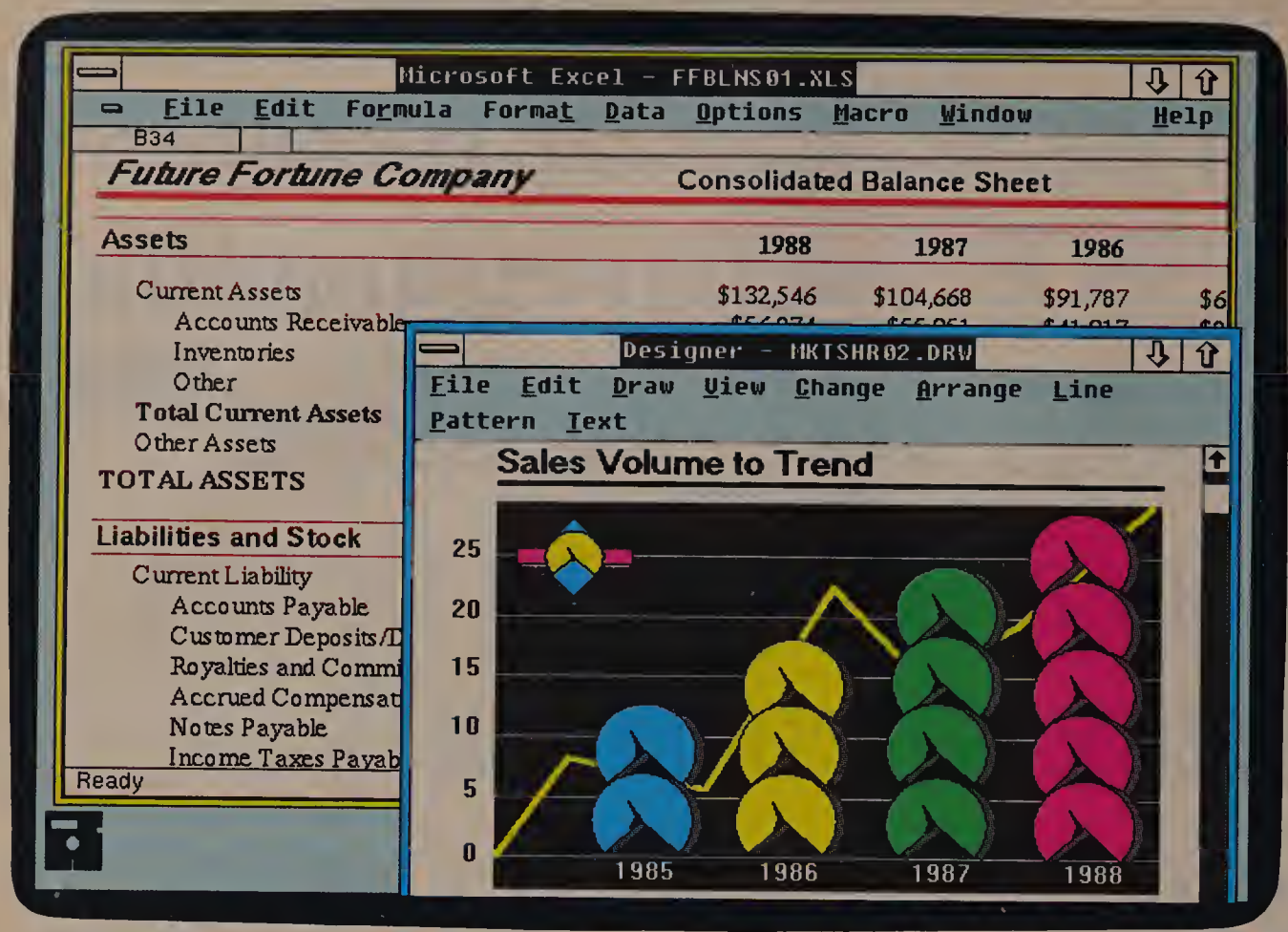
Call for more information and the name of the hDC dealer nearest you.
(800) 321-4606, Ext. 1057

hDC The Windows specialists who also bring you hDC Windows Express™ and hDC Windows Color™.

hDC Computer Corporation / 15379 NE 90th Street / Redmond, WA 98052-3522 / (206) 885-5550

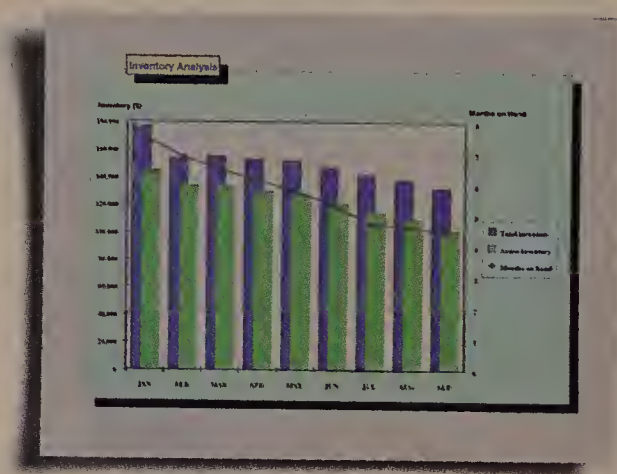
© Copyright 1989, hDC Computer Corporation. hDC Windows Color, hDC Windows Express, hDC Windows Manager, and MicroApp are trademarks of hDC Computer Corporation. Microsoft is a registered trademark of Microsoft Corporation.

Circle 107 on reader service card

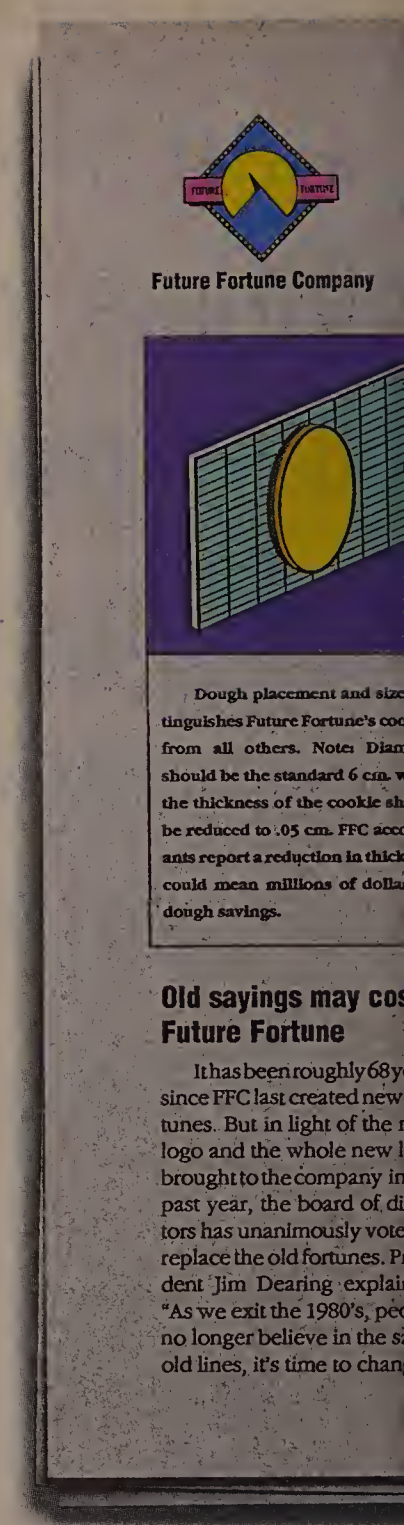


By no small coincidence, Microsoft Windows works the way you do: On more than one thing at a time.

WYSIWYG. What you see on screen...

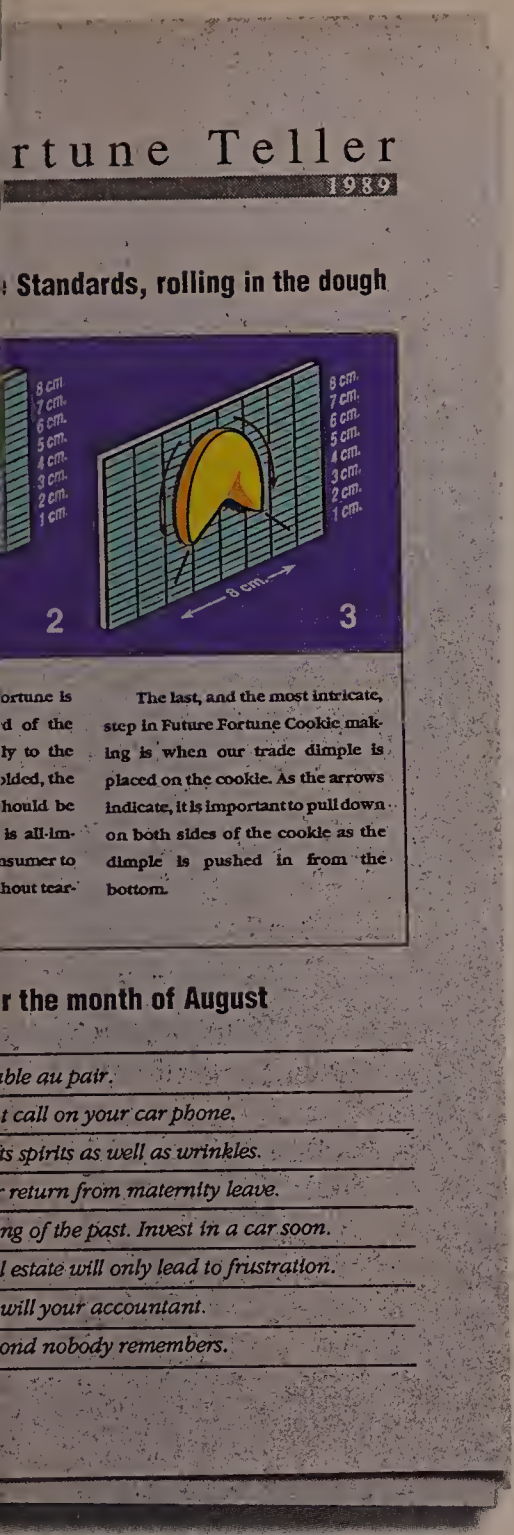


...is exactly what you get on paper.

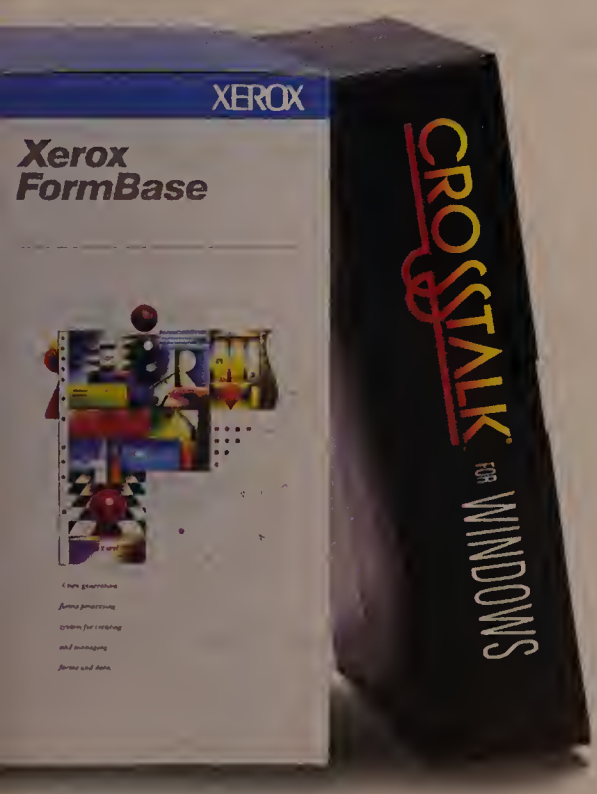


An entire environment t

More good news: Hundreds of great Windows applications are available right now, as you read.



nazing things—like this—simply.



We'd like everyone who's using Windows applications on a part-time basis to please stop.

The trouble with using Windows™ applications every once in a while, is that you're only amazingly productive every once in a while.

This has got to stop. Which is why there's the Microsoft® Windows environment—the first and only *graphical* environment to let you work with multiple Windows or DOS applications without ever closing a single file, or quitting a single program.

You may never see your C prompt again. Just give Microsoft Windows a 40-hour work week and you'll be pointing, clicking, cutting, pasting and flying through your work with the greatest of ease. Cut from a spreadsheet and paste onto a word processing document—without scissors and a copy machine. Exchange information, link files and programs, then watch your data get updated automatically, or if you prefer, at your command.

Call us at (800) 541-1261, Dept. K10 for more facts about how Windows can open up doors, and for our free Windows Shopping Catalog.

And see how the only way to get the most out of your Windows, is to look into ours.

Microsoft®
Making it all make sense™

Customers inside the 50 United States, call (800) 541-1261, Dept. K10. In Canada, call (416) 673-9811. Outside the U.S. and Canada, call (206) 882-8661. ©1989 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and *Making it all make sense* and Windows are trademarks of Microsoft Corporation.

BRIDGE/386 AND TOOLKIT 1.1

Batch language

PROS: Integrated editor, excellent debugging support, can control Windows and non-Windows applications

CONS: No on-line help, can't develop custom icons, expensive

John Walkenbach

"You press the button, we do the rest." Kodak's old slogan aptly sums up the appeal of *Bridge*, a batch language that lets you perform complex *Windows* operations with push-button ease.

The *Bridge/386–Toolkit* combination goes far beyond DOS batch capabilities. (The stand-alone *Bridge/386* and */286* products are underpowered versions that aren't recommended.) A reasonably experienced user can easily add a custom menu system to *Windows* or write a short batch file that loads, sizes, and places applications on screen. If you've written heavy-duty DOS batch files or *1-2-3* macros, adding fancy touches like dialog boxes is child's play.

Those with programming experience can easily create turnkey interfaces that transparently tie different *Windows* applications together. Using *Windows'* DDE facility, a *Bridge* file could gather user input with a custom data entry form, pour the data into *Excel* for calculation, then paste the result into an *Ami* document and print it out. The user would deal only with the custom input screen.

Since the *Bridge/386–Toolkit* combination works under *Windows/386*, it can even manage DOS programs in their own windows and pass data using the Clipboard.

(*Bridge/286* is limited to passing commands at the DOS prompt.) If you're really ambitious, *Bridge* can even link applications on networked PCs.

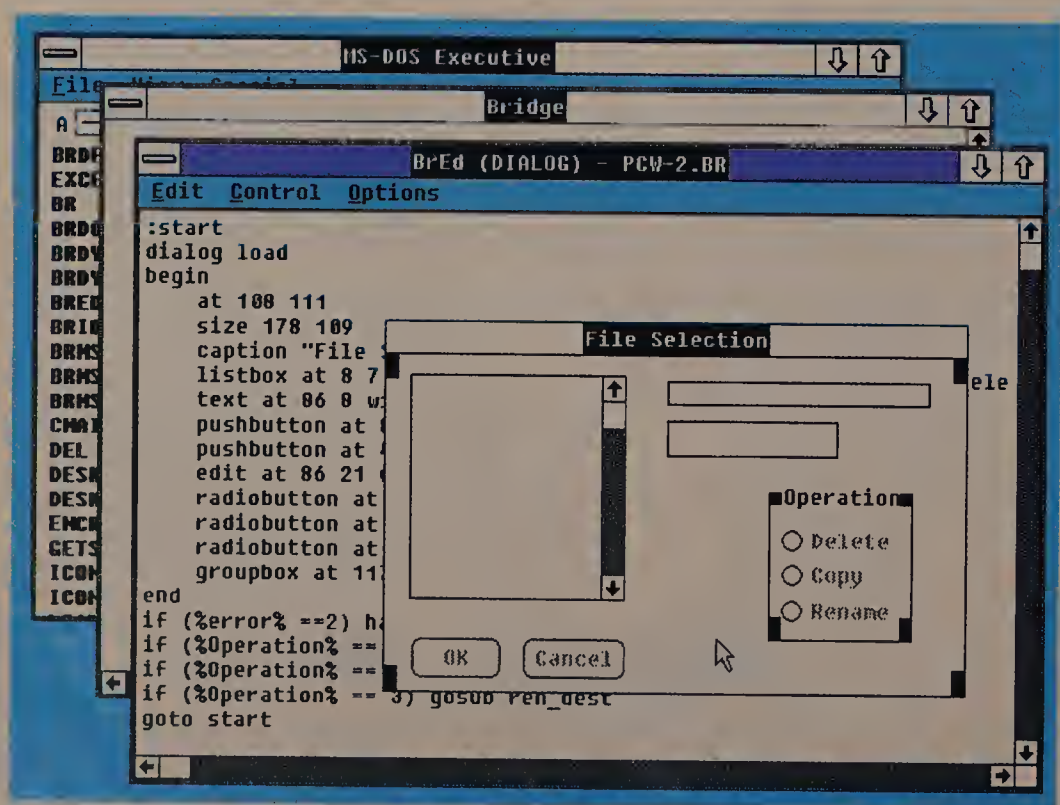
The key to such easy batch file development is BRED, *Bridge*'s integrated editor. Functions and commands can be pasted directly into a file from pulldown menus. There's a RUN command for testing files on the fly, single-step and line-by-line tracing, and even a way to monitor variables and change them midstream. BRED can also spit out code for *Windows*-style dialog boxes with list boxes, radio buttons, and icons. *Windows* developers take note: *Bridge* will save code in *Windows SDK* format, making it easier to quickly prototype *Windows* applications.

Bridge batch language resembles BASIC with its IF...THEN...ELSE, GOSUB, WHILE, and FOR...NEXT constructs. You can work with arrays, pass parameters to subroutines, and transfer control to another *Bridge* file. Version 1.1 can also incorporate bit-mapped graphics, but you can't create custom icons.

Developers won't find on-line help in *Bridge*, nor does it include a facility to build custom help for end users. BRED and a new demo provide some help with the first problem, but *Bridge* is still largely a tool for advanced users and developers. But if you're after total control—and then some—this pricey utility can do the job.

John Walkenbach is vice president and manager of market research at a major savings and loan association based in Southern California.

The BRED editor lets you craft custom dialog boxes by mixing and matching elements such as buttons, list boxes, and icons, then generates the Bridge code. If you change your mind, you edit the dialog box itself, not the code.



WHERE TO BUY

Bridge/386 and Toolkit 1.1
Softbridge Microsystems
125 Cambridge Park Dr.
Cambridge, MA 02140
617/576-2257
LIST PRICE: $695, Bridge/286 $199, Bridge/386 $249
REQUIREMENTS: Windows/286 or Windows/386 2.03 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: none
Reader service no. 602

WINDOWS MANAGER 1.0

Windows desktop utility

PROS: Automates loading and placement of Windows applications; can create custom worksets; excellent font and memory viewers

CONS: Doesn't simplify file management

Patrick Marshall

hDC's $79.95 *Windows Manager* is a nifty little package, but it doesn't quite live up to its ambitious name. This is no super batch language or even a front end for the MS-DOS Executive, but rather a smorgasbord of seven utilities that fills certain gaps in the *Windows* environment. With it, you can automatically load, size, and place predefined groups of applications ("worksets"); rearrange windows in a flash; view available fonts and system memory usage; and even call on a screen blanker.

Of course, *Windows Manager* isn't the first program to provide such tools—either the powerful *PubTech File Organizer* or the $35 shareware *Command Post* will do the job. But *Manager* makes some tasks pretty easy. For example, if you regularly use *Excel*, *PageMaker*, and the *Windows* calculator together, you can take a snapshot of this workset with *Manager* and load them (and specific data files) with a single command thereafter.

Just remember that *Manager* isn't a DOS shell; you're still stuck with MS-DOS Executive's eye-blurring file list. But if you also buy hDC's $79.95 *Windows Express*, you can mask the Executive with custom menus and create worksheets, and still beat *PubTech*'s $199.95 price tag.

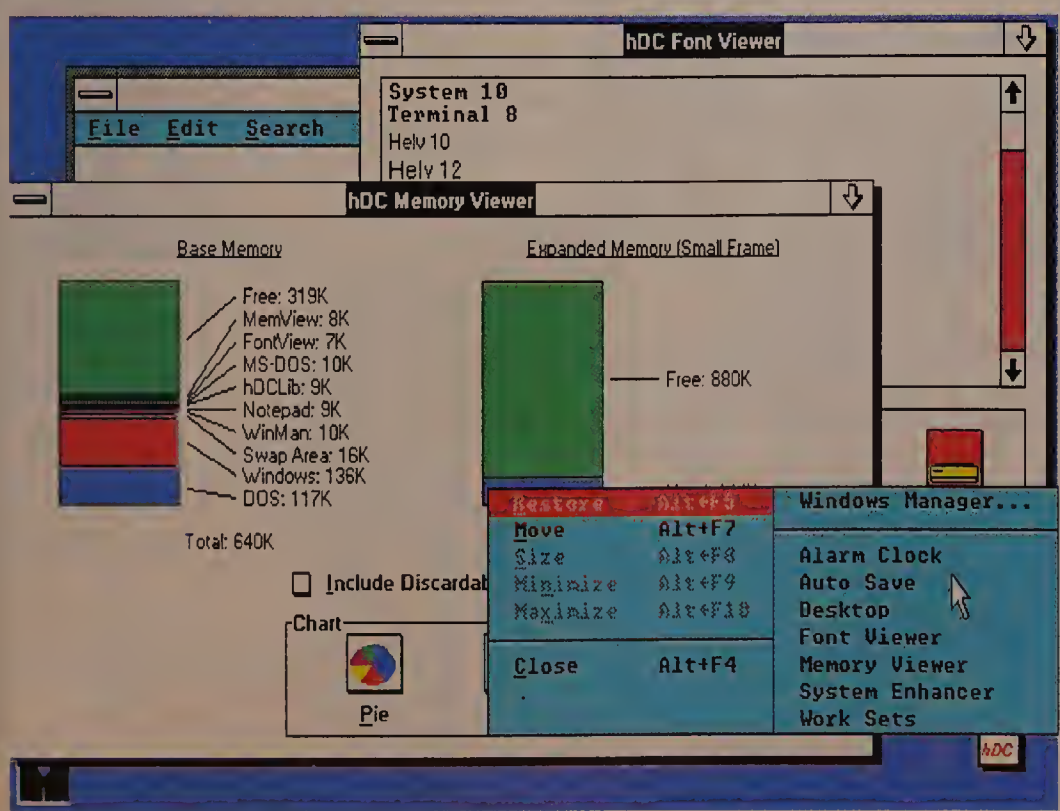
Still, hDC's pair can't match *PubTech*'s file-management clout. You don't get total Mac-style icon control of the *Windows* environment, much less the ability to copy, move, delete, or print files. And neither hDC program offers *PubTech*'s text-search and file-viewing functions.

But what *Manager* does, it does well. For example, *Manager* will display samples of available printer and screen fonts; *PubTech* merely lists them. Wonder how much system memory is available? *PubTech* notes only active applications and remaining memory, but *Manager*'s memory viewer pinpoints which applications are loaded, how much RAM each occupies, and how much free space is left, using colorful bar or pie charts. hDC also tosses in an autosave feature and a digital clock with three alarms.

So is *Manager* worth the price? It depends. If you don't need font or memory viewers, *Command Post* is a better bargain. If you want total control, the premium-priced *PubTech File Organizer* offers the most punch. But if you don't need *PubTech*'s file-management functions, the *Windows Manager/Windows Express* combination is a slick way to clean up your windows.

Patrick Marshall writes for Congressional Quarterly's Editorial Research Reports *in Washington, D.C.*

Windows Manager provides a vivid and more detailed view of memory than other Windows utilities, using bar or pie charts. You can attach the Manager menu to the Windows menu bar or place it anywhere on the screen.



WHERE TO BUY

Windows Manager 1.0
hDC Computer Corp.
15379 N.E. 90th St.
Redmond, WA 98052-3522
206/885-5550
LIST PRICE: $79.95, Windows Express $79.95
REQUIREMENTS: Windows/286 or Windows/386 2.03 or later version
TECHNICAL SUPPORT: free for 90 days from first call, toll number, M–F 7–3.
OTHER SUPPORT SERVICES: none
Reader service no. 650

DESKTOP SET 2.01

Desktop utilities

PROS: Powerful file viewer, calendar/expense ledger, phone book/dialer, and calculator

CONS: Some bugs, calendar can't automatically post recurring appointments, expensive

Patrick Marshall

DeskTop Set is clearly a labor of love. Instead of being designed by committee, it's the brainchild of Konstantin Monastyrsky, émigré programmer and owner of Okna (Russian for "windows") Corporation. And like a labor of love, *DeskTop Set* is both inspired and flawed. It's not a great little product, but with some fixing, it could be.

DeskTop Set admirably replaces *Windows'* wan collection of desktop utilities, but it lacks some key features, and it occasionally crashes. The program's most innovative contribution is a file viewer. Unlike in *Windows'* Notepad, which is limited to ASCII text files, the viewer snoops through almost any formatted text file. Better still, you can split the screen and view different parts of the same file, search for characters, insert bookmarks, print files, and even specify margins, line spacing, and headers and footers.

DeskTop Set's calculator isn't a quantum leap in innovation, but if you're a *Windows* number cruncher, the on-screen tape may be worth the price tag—especially when a tape can be annotated, globally edited, and saved for later reference. *DeskTop Set* even displays the most recent session when you call up the calculator.

The calendar is also head and shoulders above *Windows'*. Both programs let you post daily appointments, set alarms, view months, and so on, but only *DeskTop Set's* calendar includes a daily expense log. This isn't just a list with an addition function—you can precode expense categories such as "meals" and note which are deductible. Later, enter an expense, its code, and any notes, and they're posted automatically. Unfortunately, you can't issue reports by expense categories yet.

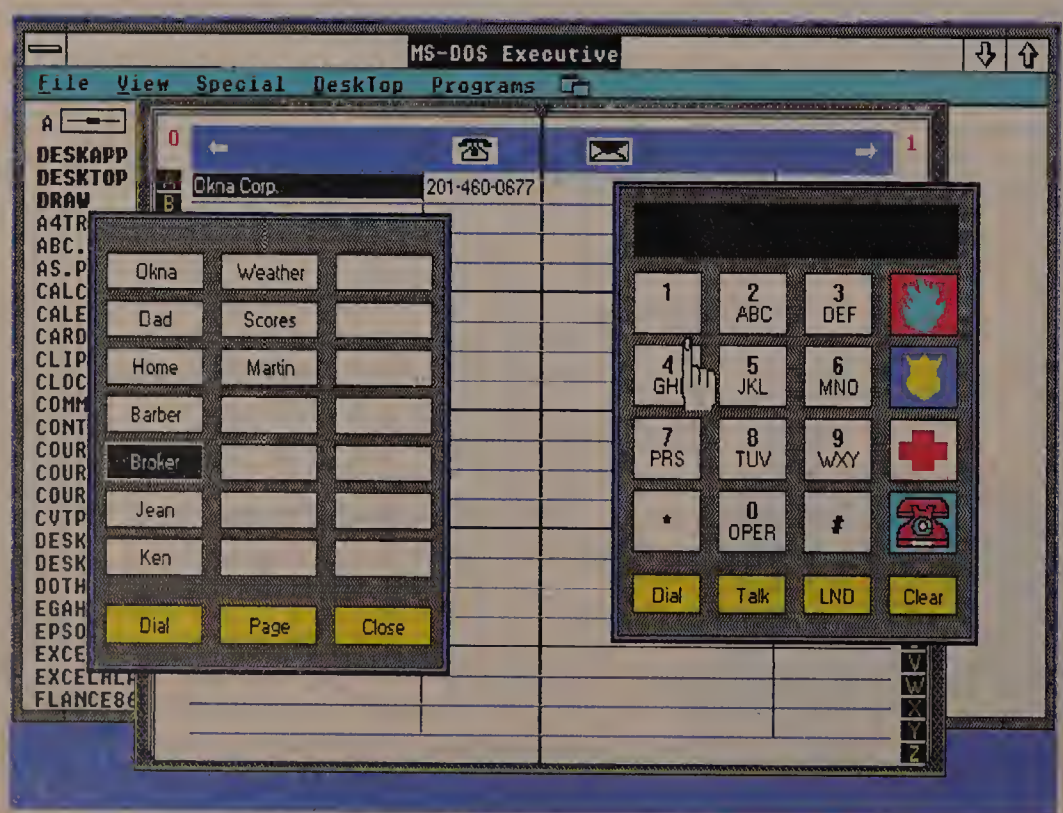
What cripples the calendar, however, is its inability to automatically schedule regularly recurring appointments such as weekly staff meetings, or to search for text strings. If you're managing anything but a very simple calendar, you'll find these flaws fatal.

The phone book, however, is superb, and it does more than simply store numbers and addresses in a familiar manual format. You can set up multiple phone books and automatically maintain a log of outgoing calls. The dialer can call any number on screen, has room for 105 preset phone numbers, and will supply area codes for major American cities. One flaw: Phone calls sometimes disappear into the modem and can't be switched over to your phone.

DeskTop Set isn't quite ready for prime time, but Okna is constantly improving it. Once a few bugs are squashed and gaps filled, *DeskTop Set* could be the *SideKick* that *Windows* users have been waiting for.

Patrick Marshall writes for Congressional Quarterly's Editorial Research Reports *in Washington, D.C.*

DeskTop Set's phone book/dialer features a speed-key pad with room for 21 preset phone numbers. You can also call up an area code directory and automatically log outgoing calls.



WHERE TO BUY

DeskTop Set 2.01
Okna Corp.
285 Van Buren St.
P.O. Box 522
Lyndhurst, NJ 07071
201/460-0677
LIST PRICE: $129
REQUIREMENTS: 512K, DOS 3.0 or later version, Windows/286 or Windows/386 2.03 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
Reader service no. 603

Word's out.

If you're still waiting for a word processor to make the most of Microsoft® Windows, you've been waiting too long.

Because Samna now has two of them.

Amí,™ the ground-breaking program that brought the graphical interface of Windows to word processing in the first place.

And Amí Professional, the muscular new high-end complement to the critically-acclaimed original.

Whether you're an executive

They may look like desktop publishers, but Amí and Amí Professional are what word processing should have been all along. Amí is yours for just $199, Amí Professional for $495.

type who types only occasionally, or a heavy user who needs lots of specialized features, one of these programs is definitely your type.

Or both, if you happen to be a corporation.

Because, in addition to using the same interface and file format, they're both designed to save you the type of thing you care about most.

Time.

About three quarters of the time you're used to spending on everything from simple letters and memos to presentations, reports and newsletters.

How?

By letting you create your words and your page layouts *simultaneously*—as one intuitive train of thought.

By providing you with professionally designed style sheets that make it simple to generate the most sophisticated-looking documents.

And by making it easy to exploit even the most sophisticated word processing features.

As well as those features you'll find in Amí Professional that you won't find even in the most sophisticated of traditional word processors.

Including tables that let you perform basic math. Charts and graphs. A drawing program. And Dynamic Data Exchange with other Microsoft Windows applications.

Of course, as far as Microsoft is concerned, the most important feature of both Amí and Amí Professional is this:

They're available now.

"Amí provides ease of use and speed with sophisticated what-you-see-is-what-you-get fonts and graphics that only expensive and complicated desktop publishing software had provided until now."

—PC WEEK

"Surprisingly sophisticated ...Amí's WYSIWYG display, coupled with its multiple column, graphics import and advanced style sheet features make it among the most powerful of the executive word processors."

—InfoWorld

"Amí Professional is not only the most capable Windows word processor but also one of the most capable contenders among all DOS-based packages."

—BYTEWeek

"The migration path to Amí Professional is a smart move, one that can serve the word processing needs of an entire organization."

—Dataquest

SAMNA
WORD PROCESSING

For the name of your nearest dealer call
1-800-831-9679.

Requires IBM® AT, PS/2 or compatible (80286 or '386 CPU); CGA, EGA, VGA, or Hercules compatible displays; MS/DOS 3.0 or higher. Amí is a trademark of Samna Corporation. All other trademarks and copyrights are acknowledged.

A free runtime version of Microsoft Windows is included with each copy of Amí and Amí Professional.

See us at Comdex, South Hall 3208.

Circle 220 on reader service card

DESQview Saves Lives

"It's fair to say that DESQview has helped us respond more quickly to emergency calls and save lives."

—Jeffrey Guterman, M.D.
Director, Systems Development, Dept. Emergency Medicine, Olive View/UCLA
Los Angeles County Medical Association Regional Poison Control Center

"Every day, twelve million people rely on us to provide them with fast, accurate information about toxic exposures, over the phone.

"Our poison information database is on a CD-ROM and we just can't afford to tie up our computers waiting to retrieve information. DESQview, with its multitasking and windowing capabilities, lets us search our toxic information database in the 'background' and swap information between programs, while inputting important patient information in another window."

"Our center uses 80286-based PCs, and I don't think there's any other environment or operating system that can give us the quick response we get with DESQview."

Maybe lives don't depend on efficient multitasking where you work, but if speed and productivity are important to you, DESQview 386 and DESQview 2.2 (for 8088, 8086, 80286) are the efficient solutions.

And they work with the software you're using today.

Quarterdeck

Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405
(213) 392-9851 Fax: (213) 399-3802

TaxView 2.00

1040 tax-preparation program

PROS: Mimics Form 1040 on screen, includes many federal forms, produces legal-size dot matrix and laser printer output, cheap

CONS: Data not always passed to related forms, few state schedules, no multiple tax scenarios

Ralph Soucie

TaxView's designers believe that imitation is the easiest form of data entry. Instead of gathering tax information in Q. and A. fashion, *TaxView* reproduces IRS forms in toto on screen. You just fill in the familiar blanks, then print out a signature-ready tax return on a dot matrix or a laser printer. It's so simple you won't even need the manual.

This literal approach is dandy if you're doing only one relatively straightforward tax return. But if you're preparing complicated, multischedule returns, you'll go mad scrolling past reams of IRS descriptions and waiting for the screen to redraw. Worse, in some situations, *TaxView* doesn't automatically post data to related forms, a defect likely to foul up even experienced tax preparers.

Installing *TaxView* is a prompt-driven affair, but adding the supplied downloadable laser fonts for printing the tax forms means fiddling with *Windows*' control panel. Once you pick the desired 1040 form, *TaxView* pops it onto the screen. You fill in the form as you would its paper equivalent and jump to supporting forms and schedules by double-clicking the appropriate input field.

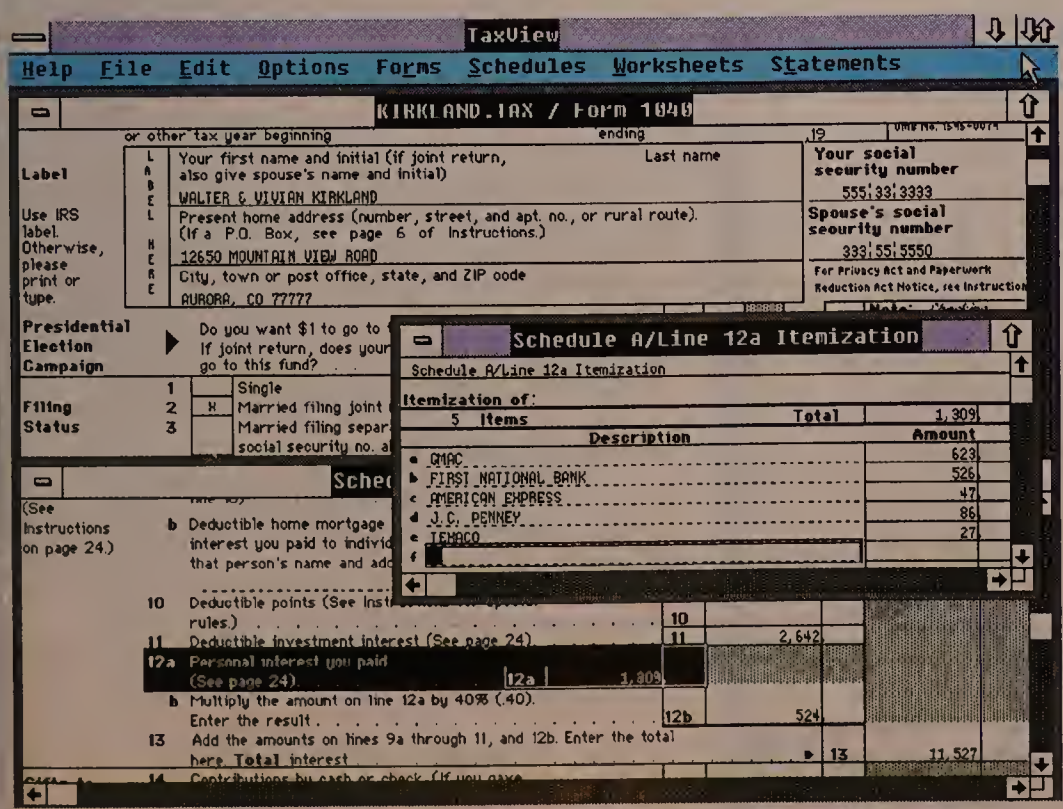
As you move through *TaxView*, you'll find it surprisingly powerful for the price. It handles all depreciation methods and computes passive loss limitations. Keeping track of supporting detail for partnership income and capital gains is a breeze with *TaxView*'s predesigned statements. And you can create free-form itemization schedules to back up any line item on a return.

But *TaxView* has some irritating potholes. If you have multiple business schedules, the program won't automatically limit your total Section 179 deduction to the statutory $10,000. And Schedule C net income does not automatically generate a Schedule SE. Sophisticated real estate investors with interest expense or passive losses should definitely steer clear of *TaxView*, since the program does not transfer certain critical computed amounts from one tax form to another.

TaxView does a nice job with detailed personal returns—even for two or three sole proprietorships. But watch out if your return touches on complex tax issues. The problem is, most nonprofessionals can't identify these situations. When *TaxView* solves its shortcomings, it will be well worth recommending. Note: Future versions of the program will be sold as *Macintax for Windows*.

Ralph Soucie is a contributing editor for PC World.

TaxView can create a supporting itemization schedule for virtually any line item on the return—in this case, for personal interest on Schedule A.



WHERE TO BUY

TaxView 2.00
SoftView, Inc.
4820 Adohr Ln., Ste. F
Camarillo, CA 93010
805/388-2626
LIST PRICE: $99, annual update $55; state modules $79, annual update $40 (for California, Connecticut, Illinois, Massachusetts, New Jersey, New York, Ohio, and Virginia)
REQUIREMENTS: 640K, hard disk with 2.5MB free, DOS 3.0 or later version, Windows 2.03 or later version
TECHNICAL SUPPORT: unlimited, toll number, M–F 9–5
OTHER SUPPORT: none
Reader service no. 601

SUPERBASE 2

Data manager

PROS: Menu-driven application building, easy data validation, mail merge, text editor, communications facility

CONS: Limited input-form and report capabilities, tedious query editing, doesn't follow Windows interface conventions, no font support, slow

Alan Schwartz

Data management programs still have one foot in the programming world. *Superbase 2* tries to pull a toe out of the muck. Instead of presenting users with an arcane command language, *Superbase* lets you store and manipulate information using menus and dialog boxes. To build a query or report, you click through a series of dialog boxes that ask you to specify fields, sorting order, filters, and subtotals. Then *Superbase* assembles a command string that you can execute and save.

Click an icon on the VCR-like control bar at the bottom of the screen, and you can spin through data in a table view (spreadsheet-style rows and columns), a record view (field names alongside data values), or a form view that lets you arrange fields anywhere on screen. (You can't edit data in a table view.)

Setting up data validation based on a lookup table is short work; enter the wrong value, and up pops a list of proper responses. Multifield index keys and multiple indexes are supported, although creating a multiple-field index requires you to define a virtual concatenated field in your file—not the most intuitive approach to the problem.

Superbase has a built-in *Write*-like word processor that ties into an easy mail merge facility. The program also imports and exports *dBASE II* and *III*, *Excel*, *1-2-3*, and delimited and fixed-field-length ASCII files. You can even display images as fields in a record.

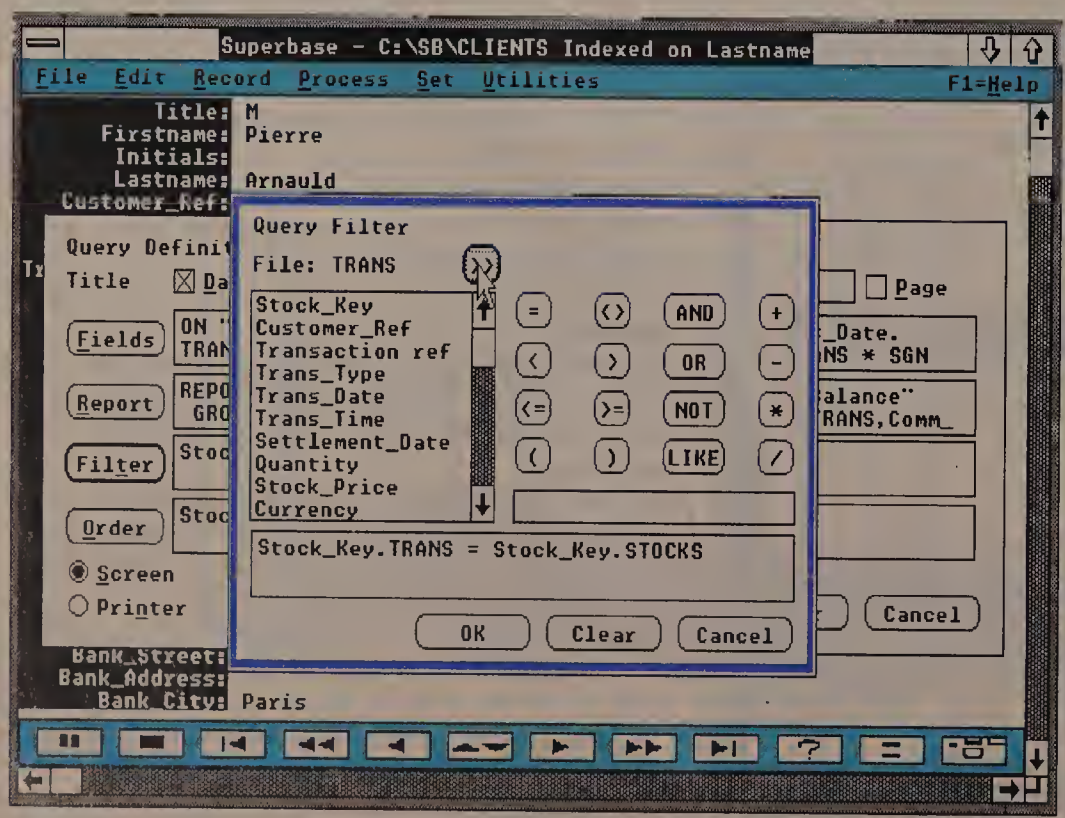
Sounds good, doesn't it? But in practice it's clear that *Superbase* can't beat *Alpha Four* and *Q&A 3.0* on their own turf. *Q&A*'s tightly integrated word processor and simple forms-oriented query system are more powerful than *Superbase*'s approach. *Alpha Four*'s custom data-input screens and report capabilities make data management chores much easier for most users.

Even if you prefer the *Superbase* way, be prepared for some quirks. Changing a query means slogging through the dialog boxes again or modifying a huge command string by hand. Order a query differently from the current index, and you'll gaze endlessly at *Windows'* hourglass icon.

If you must have a *Windows*-based data manager, hold out for Xerox's long-awaited *FormBase;* otherwise, exit *Windows* and check out *Q&A* or *Alpha Four*. You might also consider Precision's forthcoming *Superbase 4*—which promises a BASIC-like command language, DDE support, presentation-quality forms output, and multiuser hooks.●

Alan Schwartz is a data base application specialist living in San Francisco.

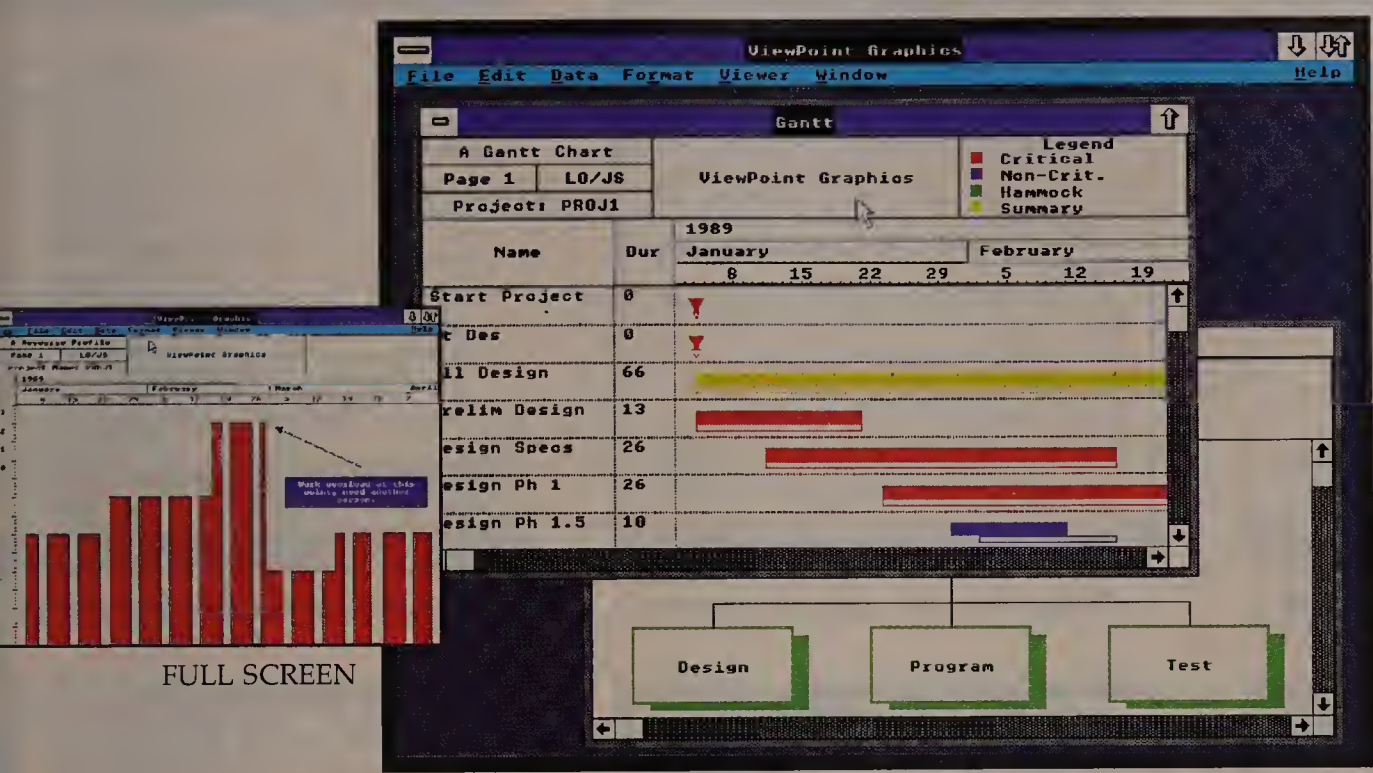
Superbase's feature-rich queries can be built and modified by clicking through dialog boxes. Data in related files can also be accessed with a click of the mouse.



WHERE TO BUY

Superbase 2
Precision Software, Inc.
8404 Sterling St., Ste. A
Irving, TX 75063
800/562-9909, 214/929-4888
LIST PRICE: $295
REQUIREMENTS: 640K, DOS 3.0 or later version, Windows 2.03 or later version (Windows run-time included)
TECHNICAL SUPPORT: unlimited via mail and CompuServe and American People/Link forums, unlimited phone support first 90 days, toll number, M–F 8:30–5:30
OTHER SUPPORT: $75 for 5 hours phone support, technical newsletter, free software updates, and 25 percent discount on major upgrades
Reader service no. 605

The best project manager Just got better.



FULL SCREEN

WINDOWS™

Now, ViewPoint™ 4.0 with Windows™ graphics

They said it. We didn't. Here's what InfoWorld and PC Magazine said about the Computer Aided Management's ViewPoint software:

INFO WORLD BEST IN ITS CLASS

"ViewPoint: Easy to Learn and Use; Great Value for Powerhouse Project Management."
Mike Heck *InfoWorld 1989*

PC MAGAZINE EDITOR'S CHOICE

"With its latest release of ViewPoint, Computer Aided Management Inc. (CAM) has given project managers what they've been waiting for: a PC program that's easy to use, yet powerful enough to handle large projects and flexible enough to import and export dBASE and mainframe software files."
Ryan Davis-Wright *PC Magazine 1989*

That was before ViewPoint 4.0 and Windows.

New Windows-based Graphics. ViewPoint 4.0, with the addition of Windows-based graphics, gives you a complete project planning, management and presentation solution.

Intuitive Windows interface. Use your mouse or keyboard to open several windows into your project, zoom for a detailed view or scroll through a Gantt Chart. Open windows into other programs such as spreadsheets or databases. All, in the intuitive Windows environment.

Circle 46 on reader service card

Charts that communicate. Select and customize charts with real-time point-and-click editing. Control fonts, size, color and the attributes of each chart element. ViewPoint 4.0 includes drivers for popular printers, laser printers and plotters. And much more.

Plans that work. ViewPoint's top-down approach to project management means you can start with the goal and work down to the finest detail. Relate activities. Play "What If." Speed project planning and reports with templates. And with ViewPoint, you won't run out of power right in the middle of a critical project.

Total support. Three days of intensive project management training come with every ViewPoint package. And our product hot lines are open 8AM to 5PM Pacific Time every weekday.

Want to know more? Call us toll free, or return the coupon below. We'll send you a comprehensive brochure and the ViewPoint 4.0 demo disk.

See us at
COMDEX/Fall '89
November 13-17, 1989

ViewPoint
PROJECT MANAGEMENT SOFTWARE

1-800-635-5621

CAM COMPUTER AIDED MANAGEMENT
1318 Redwood Way,
Petaluma, CA 94954
707-795-4100

I'm interested. Send me more information on ViewPoint 4.0 and its new Windows based graphics.

Name_____

Company_____

Address_____

City_____ State____ Zip_____

Phone (_____) _____-_____

FREE VIDEO!

COREL DRAW!

Let us introduce you to the World's Finest PC Illustration Package. See how both professionals & novices can create illustrations and graphics with Corel DRAW!

Over 100 free Typefaces!

Over 300 free Clipart images!

Connectivity
Slidemaking, Windows Clipboard, CGM, IBM mainframe graphics

CALL DIRECT TO RECEIVE AN EXCITING VIDEO ON THE CAPABILITIES OF COREL DRAW!

(613) 728-8200

Ask for Customer Service
Corel Systems Corporation

Circle 496 on reader service card

AudioSoft

Presents Audio Lessons for Windows

Microsoft Excel Basic Skills $89.95
Microsoft Windows 286/386 ..... $59.95
Aldus Pagemaker 3.0 ..... $79.95
Also for DOS users
Microsoft Word 4.0 & 5.0 ..... $79.95

Learn these software packages right at your own computer. No manual reading required. Simply play our 2 one hour cassetteware tapes and follow the instructions. Audio Lessons are specially designed for small businesses, the busy professional, and Corporate training programs.

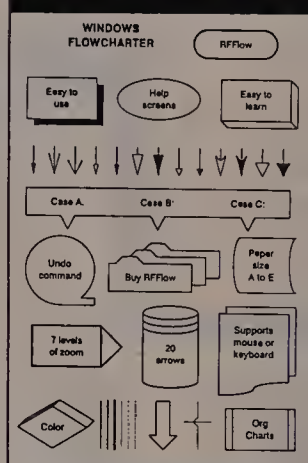
Special discounts for quantity Corporate & Dealer accounts. Purchase any one of the above packages with Audio Windows 286/386 before January 1, 1990 and pay only $119.95.

For price quotes FAX (509) 924-9562.
Washington residents add 7.8% tax to orders.

AudioSoft Corporation
1380 156th N.E., Suite 222 • Bellevue, WA 98007
(509) 928-9243

Circle 293 on reader service card

RFFlow Professional Flowcharting



- Draw flowcharts or organization charts
- 75 shapes automatically adjust in size
- Move, copy, or delete groups of objects
- Move flowcharts to other applications via the Clipboard
- Print using laser printer cartridge or soft fonts
- 7 levels of zoom
- Draw charts containing over 2000 objects
- Supports Windows printers, plotters, fonts
- Free trial disk

RFF ELECTRONICS
1053 Banyan Court, Loveland, CO 80538
CALL: 303-663-5767

$79
(Requires Microsoft Windows)

Circle 333 on reader service card

Icon Author

Create Interactive Desktop Presentations In Any Media

Icon Author is an object oriented authoring system for creating training programs, slide shows, point of sale systems and more! No programming skills are required.

Call Today!
AimTech
Nashua, NH
1-800-289-2884

Circle 118 on reader service card

HONEY, I SHRUNK THE KEYSTROKES...

using READPRO™ - Information Recognition Software - from OCRON.
Call today for a free demo!
(408) 980-8900. Dept. PS

READPRO™286/386 supports Cannon, HP, Microtek, AVR, DEST and UMAX scanners.

OCRON

Circle 327 on reader service card

MACINTAX® FOR WINDOWS™

"Rating: 10 of a possible 10...simply the best microcomputer program on the market for personal tax preparation. Easier to learn, to use and to print forms than any other tax program I've ever tested."
—Don Crabb
Chicago Sun Times

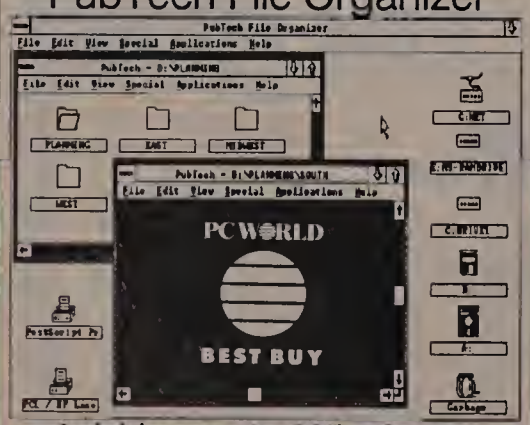
"There's no question about it. Fast, accurate, friendly...*the* program to buy... almost makes tax preparation fun."
—InfoWorld

Just $99 at a dealer near you.
To order direct, call
1-800-622-6829

SOFTVIEW™

Circle 346 on reader service card

PubTech File Organizer



Add icons to Windows.

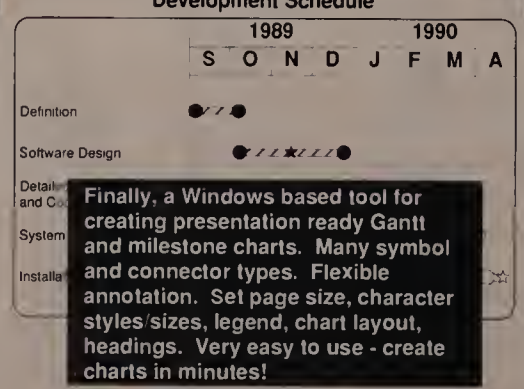
"PubTech sounds amazing, but it just does what Windows should have done in the first place." - PC World, Aug. '89.

Publishing Technologies, Inc.
7719 Wood Hollow Dr., Suite 260
Austin, Tx 78731 (512) 346-2835

Circle 344 on reader service card

GANTT CHARTS

Milestones, Etc. ($89)



Finally, a Windows based tool for creating presentation ready Gantt and milestone charts. Many symbol and connector types. Flexible annotation. Set page size, character styles/sizes, legend, chart layout, headings. Very easy to use - create charts in minutes!

$89 + 3.50 S/H

SoftPro
P.O. Box 1167
Manchaca, TX 78652
1-800-666-3886
Visa/MC/Amex/POs

Circle 288 on reader service card

MetaDesign

The only diagramming tool for complex, evolving systems

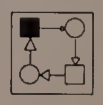
For any system you need to visualize, including:

Flow charts
Data flow diagrams
Work flow models
Process flow analysis
Telecomm networks
Tech documentation

Featuring:

- Single-level or hierarchical, multi-level diagrams
- "Sticky" connectors
- Unlimited number, variety, or size of objects—standard or user-defined
- Comprehensive graphics editing capabilities
- Integrated text processing
- Hypertext
- User-extensible

Demo disk available, call us: (800) 227-4106
Call or write for more information.



Meta Software
150 Cambridge Park Drive, Cambridge MA 02140 USA
(800) 227-4106 Fax: (617) 576-0519

Circle 291 on reader service card

Create Windows Applications Fast

Actor®

- Object-oriented language
- Complete class library
- Develop twice as fast as C
- Only $495: no royalties

800-869-1144
or 312-328-3800

The Whitewater Group®

Circle 350 on reader service card

Add Data Management Capabilities Easily

WinTrieve™

- Powerful data management
- Indexed file support (ISAM)
- C & Actor libraries
- Only $395; no royalties

800-869-1144
or 312-328-3800

The Whitewater Group®

Circle 326 on reader service card

Edit Resources Interactively

Whitewater Resource Toolkit™

- Paint bitmaps, icons, cursors
- Create dialogs & menus
- For any Windows developer
- Only $195

800-869-1144
or 312-328-3800

The Whitewater Group®

Circle 342 on reader service card

Custom Windows Programming

- Experienced
- Large Staff
- Quick Results

McClure Consultants, Ltd.
Barrington, IL 312-382-6233

Circle 332 on reader service card

File Manager

File Folder Utilities Applications Close F1=Help

Copy...
Compare...
Delete...
Undelete...
Print...
Rename...
Move...
Encrypt...

Show
Find
Explore...

Get Info
Change Attributes...

About File Manager

- Organize files in folders
- Directory tree
- View the contents of any file
- Search for files or text
- Undelete files and directories
- Run your applications directly from a menu
- Print tree, group of files or directories
- Backup and restore
- Tile windows
- On-line Help
- Screen blanking
- Hot-linked windows

Only $99

distinct™ Corp. (408) 741-0781
14082 Loma Rio Drive, Saratoga, CA 95070 - USA
The better Presentation Manager for MS-Windows

Circle 315 on reader service card

WindowWare Warehouse™

"We Do Windows"

Windows™ Catalog $5

FREE! - If you use the Reader Service card

Excel	$245	CrossTalk	$155
Packrat	$315	Ami	$155
PaintBrush+	$99	SuperBase 2	$225
Corel Draw	$340	Sprngbrd Pub	$105
Arts&Letters	$510	Pixie	$155
Blnce of Pwr	$39	Windows SDK	$375

Call 1-800-762-9273

2701 Calif. Ave SW, Suite 212A, Seattle WA 98116

Circle 335 on reader service card

ALTERNATIVE INPUT

Light Pens for Windows
• Space Saving • Easy to use

FTG DATA SYSTEMS (800) 962-3900

Circle 115 on reader service card

Place Your Ad in the PC WORLD WINDOWS Catalog Today!

Call Sandra Wade
or Greg Messina
1-800-435-7766
In CA:
1-800-435-7760

PC WORLD

New For Project Management

I/CSCS PC

K&H is opening WINDOWS into a new innovative solution to project management for today's cost competitive world. i/CSCS PC delivers superior capabilities to:

- *Estimate*
- *Forecast*
- *Budget*
- *Earned Value*
- *C/SCSC Reporting*
- *Analyze*
- *Revise*
- *Proposal*

Call or write for more information:

K&H
Professional Management Services

2301 Dupont Drive, Suite 550, Irvine, California 92715
(714) 851-1999

Circle 331 on reader service card

We Do Windows... On LANs

Windows Workstation Menu & Print Manager™ turns Microsoft Windows into the ideal graphical user interface for LANs, providing:

- Network Security
- Data Encryption/Decryption
- Inter-Station Messaging
- Customizable Menus
- Printer Management & Control
- Memory Efficient

Automated Design • (404) 394-2552

Circle 297 on reader service card

NEW!

ERwin

Entity-Relationship modeling tool for database professionals

ERwin automates the Entity-Relationship design method and gives you presentation quality graphics at an affordable price.

With ***ERwin*** you can:
Define your entities, attributes, and relationships.
Document referential integrity constraints.
Normalize your database.
Print a variety of graphics and text reports.

LOGIC WORKS, INC., 601 Ewing St., Suite B7
Princeton, NJ 08540
Tel. (609) 683-0054
Fax (609) 924-0029

logic™ works

Circle 323 on reader service card

Amí is here. It's about time.

Now there's a Windows-based word processor that lets you create your words and your page layouts *simultaneously.* Amí™ can save you three quarters of the time you're currently spending on everything from simple letters to fancy presentations.

Isn't it about time you discovered Amí?

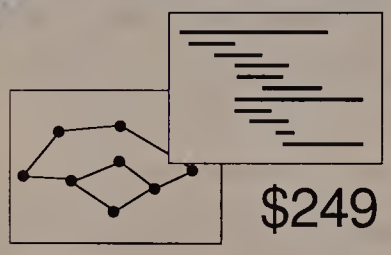
ONLY $199

FROM SAMNA OR YOUR LOCAL DEALER: 1-800-831-9679.

Circle 338 on reader service card

NEW!

Project Management For Windows



$249

TOPDOWN™
PROJECT PLANNER

The intuitive approach to project management. Call 707-545-7777 or write for free brochure. 30-day money back guarantee.

Ajida Technologies, Inc.
613 Fourth St., Santa Rosa, CA 95404

Circle 336 on reader service card

Maintain your momentum in the Windows Marketplace. Advertise in the Monthly **Windows Catalog**, starting with the December Issue.

Call Sandra Wade or Greg Messina at **PC WORLD** for details.

800-435-7766
In CA:
800-435-7760

PC WORLD

Improve job performance and user satisfaction *with Bridge.*

Introducing Bridge, the batch language that easily integrates multiple Windows and DOS applications into a multi-tasking environment within a unified graphical interface -- without complex programming in a low level language!

FREE DEMO DISK

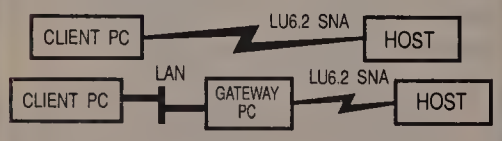
1-800-325-6060
1-800-325-5959 (in MA)

Bridge

Circle 301 on reader service card

ACES LU6.2

Run concurrent LU6.2 applications in multiple windows. Use a standalone PC directly connected to host, or use a LAN PC as client to ACES server on gateway PC. Connect to any LU6.2 computer: S/38, AS/400, or System/370.



The ACES library of C language calls provides a complete implementation of IBM's CPI-C for use in MS-Windows. DDE support for Excel macro calls.

Ergonomic Software Inc.
305 East 86th Street, New York, NY 10028
212-534-2680

Circle 289 on reader service card

A Thinking Game for Microsoft Windows

An entertaining strategy game of hide and seek set in a maze of illusion.

$ 25

(800) 827–0416
August Development
6822 21 DR NE, Marysville, WA 98270

Circle 294 on reader service card

PC WORLD's 2.8 million readers anxiously await the February 1990 ***PC WORLD*** *WINDOWS Special Report* and ***PC WORLD WINDOWS Catalog.*** So get ready for them by calling Sandra Wade or Greg Messina at **PC WORLD.** Don't delay, the **February** WINDOWS Catalog **closes December 1** and this is one "window or opportunity" you can't afford to miss.

PC WORLD

Exploit Profit Opportunities!

Automatically update Excel spreadsheets with real time and historic stock, future, index and option prices from Lotus Signal® using

TA_SRV

Compatible with RealTick III, our real time technical analysis and Market Profile® application. Also compatible with Technical Tools, Options-XL and other DDE aware applications.

Only $350.

Townsend Analytics, Ltd.
100 S. Wacker Dr., Suite 1506
Chicago, IL 60606
(312) 621-0141 FAX (312) 621-0487

Circle 322 on reader service card

An Exciting New
OUTLOOK
on Project Management

Planning
Outlining
Scheduling
Tracking
Reporting

Project OUTLOOK 2.0

by STRATEGIC SOFTWARE PLANNING CORPORATION
One Athenaeum St.
Cambridge, MA 02142
617-577-8800
800-777-3282

Circle 334 on reader service card

Quantum Consulting Inc.

We Do Windows!

- Customized User Interfaces
- Sophisticated Presentation Graphics
- First Windows Product Delivered 1986

For Information and a Free Demo Call
415-540-7200

Circle 348 on reader service card

Scrapbook+ 2.0

*Visually store, organize, and convert graphics and text with **Scrapbook+** for Windows. Now works with Micrografx Designer and PC Paintbrush files.*

"An absolutely essential product." · *Microtimes*
"We can't overestimate the importance of this product." · *Desktop Publishing*

EIKON
EIKON SYSTEMS, INC.
989 E. Hillsdale Blvd, Suite 260
Foster City, CA 94404
***Phone:* (415) 349-4664 · *Fax:* (415) 349-4896**

Circle 317 on reader service card

ESSENTIAL WINDOWS UTILITIES

1. **LAUNCHER:** Allows you to easily run programs without having to search through directories to find them.
2. **SEARCHER:** Search for a file, or search many files for matching text (uses wildcards).
3. **LOCKWIN:** Password protect your Windows session while you're away. Either locks user input, or freezes Windows.
4. **DISKTREE:** File and directory management. Displays subdirectories with a tree structure and shows files sorted by name, extension, size, or date. Several files can be easily selected, then copied,moved,renamed,or have their attributes modified. Directories can be created,deleted,and renamed. Gives vital disk statistics.
5. **BASECONV:** Convert numbers between binary, decimal, and hex.
6. **SCICALC:** Scientific calculator (trig, log, y^x, exp, sqrt, 1/x, %, factorial, e, pi, memory, etc.).

ALL 6 FOR JUST $49.
(415) 327-9107
MICRO MAGIC
261 Hamilton Av. Suite 320 Palo Alto, CA 94301

Circle 320 on reader service card

BOOKKEEPING'S A BREEZE WHEN YOU OPEN A WINDOW

BOOKKEEPING BY DESIGN is an innovative accounting program designed by a CPA. It includes all standard features (GL, AR with invoicing, AP, PR), as well as print queuing, user-selectable fonts, the ability to add and look up details on the fly, and background processing. Call today to find out how you can get a free demo disk: 1-800-548-9179.

ACCOUNTING BY DESIGN
2140 Shattuck Ave. · Berkeley, CA 94704

Circle 292 on reader service card

TMI ENGINEERING
Windows Workstation
> 1280 X 1024 Color Touchscreen
> 80386 plus 5 Coprocessors
> 8 mips Graphics Processor
> 8-48 mb 32 bit Memory
> 300 dpi Color Printer
> 4-33 mb Disk Cache

* The TMI Engineering Windows Workstation is the result of two and a half years of intensive research into the cost effective WORKSTATION application of the huge PC compatible software base and the growing Windows application base.

* ***Your time and your customers time is worth more than the difference in price between our Workstation and a regular computer let us show you how to compete and win in todays market.***

From $25,000.00. Delivery 30 days ORO + DP

TMI ENGINEERING
LONDON TERRACE P.O. BOX 20363
NEW YORK, N. Y. 10011-0004
TEL (212) 969-9494

Circle 347 on reader service card

PALANTIR—WINDOWS

Windows Spell $95.00
Spell checker for PageMaker, Excel, Write, Designer, Graph Plus and more.

Windows Filer $195.00
Flat data base that incorporates graphics and text into the data base.

WinText $195.00
Windows based full function word processor.

Palantir, Inc
4455 S. Padre Island Dr. Ste. 43
Corpus Christi, TX 78411
(512) 854-8787 Fax (512) 853-1541

PC WORLD

Find out what's in it for you.

512 Second Street
San Francisco, CA 94107

NETWORKS

Take Center Stage

DAN ESCOBAR

Wells Fargo's Kingsley Mar advises careful prototyping: "If you take short-cuts, you just get burned."

NEED AN EDGE ON THE COMPETITION? BEHIND-THE-SCENES VISIONARIES ARE DISCOVERING THAT LAN APPLICATIONS CAN MAKE THEIR BUSINESSES RUN FASTER, CHEAPER, AND SMARTER.

ERIC BENDER

"This is where we process billions of dollars every day," says the financial services executive, looking toward the networked PCs that stretch across a floor of offices a few blocks off Wall Street. "This is the lifeblood of our business."

PC local area networks (LANs) didn't start out in such starring roles. Instead, they infiltrated organizations as cost-saving mechanisms for sharing resources like hard disks and printers. The cost/benefit arguments only grew more persuasive as net adapters fell in price, cabling schemes became faster and more flexible, net system software gained maturity, applications began to exploit net capabilities, and nets gained solid links to other computer environments.

Now the advantages of net applications are crystallizing. Electronic mail is an instant hit, even for messages that never leave the department. Job-specific packages for traveling professionals are tightening their links with LANs, helping automate the flow of information to and from home base. E-mail packages like Enable Software's *Higgins* add support for client tracking. Upcoming group productivity packages like Lotus's *Notes* will offer greater help; one bank already employs a beta version to quickly assemble a portfolio of customer information—including personal details like name of spouse—before important visits.

But most payoffs have come from unglamorous work in the trenches, where in-house developers painstakingly customize data base applications. These systems target specific jobs within a single organization and knit them together with related tasks—often with favorable impact on the bottom line.

RESHAPING THE BUSINESS

Shearson Lehman Hutton's Taxable Fixed Income division is one of the largest bond trading operations on Wall Street. The division's Trading Services group processes thousands of transactions each day on a Novell LAN that links 300 PCs.

"Several years ago, our business began a period of explosive growth," recalls Mark Rufeh, senior vice president. "The accounting and operations staff worked 12-hour days." After Shearson's senior management initiated a strategic push for automation, "Trading Services brought PCs to the back offices, networked them, and wrote custom applications to support specific business needs," says Rufeh. "This decentralized approach accelerated application development and allowed application design to be closer to the user."

LANs "have greatly improved the timeliness, capacity, and accuracy of transaction processing," Rufeh says. "For example, over the last two years, our business in money market securities has more than doubled, yet we haven't added one employee." And employees are working normal hours again.

United Parcel Service turned to PC LANs to lower costs, boost productivity, and permit more flexible communications, says Marc Dodge, a UPS LAN network support manager in Paramus, New Jersey. "With 12 million packages a day, our logistics are pretty staggering," Dodge says. "We've installed 200 LANs in the United States and Canada." While standard word processing and spreadsheet packages are offered on the Novell nets, "what drives us is applications we do ourselves," Dodge says. As new applications appear, his group evaluates cost of delivery on PC LANs versus traditional minicomputers.

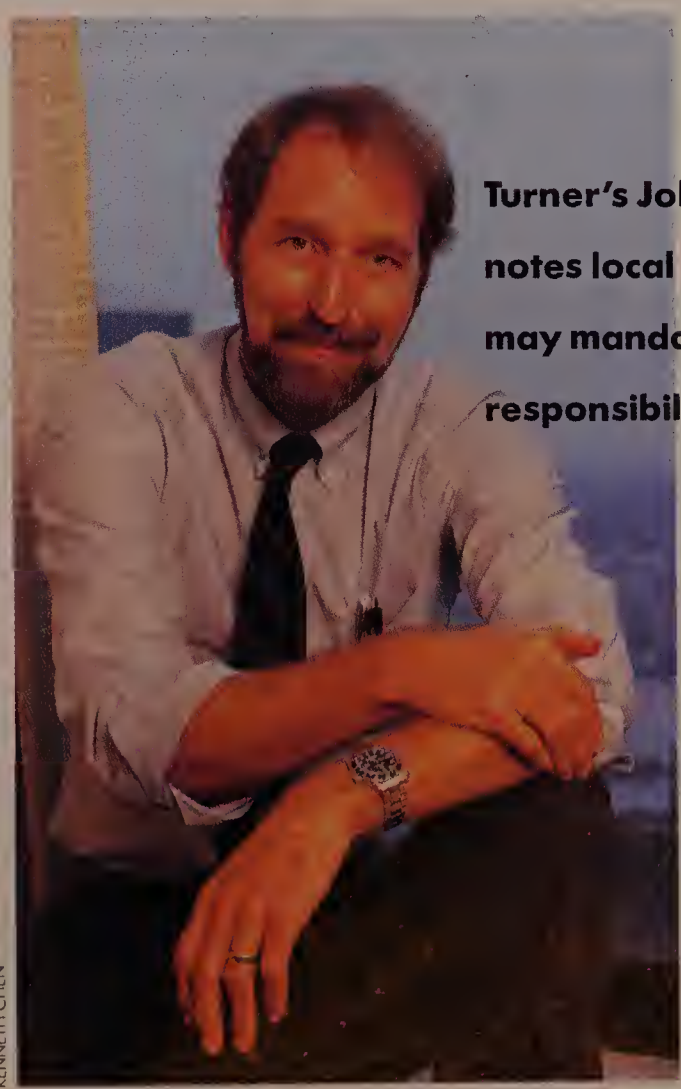
First for UPS came accounting and data entry—"Data entry was a great place to start," Dodge says. Faster data entry produced a 10 percent boost in productivity. With employees making 500 million keystrokes a month, "ten percent is a nice piece of change," he notes. Nets also gave managers better tools for optimizing daily operations.

Next on line was delivery information. Employees can digitize the delivery record with a hand scanner and store that data on the LAN; if the customer wants proof of delivery, an image of the receiving signature can be merged into a letter and printed out. UPS also employs the nets as routes to mainframe hosts and is stringing together multiple nets at its big district offices. And the company's telecommunications group is linking district offices across the U.S. through high-speed leased lines.

Wells Fargo's Wholesale Loan Systems group depends totally on PC nets, notes Kingsley Mar, systems vice president for research and development in San Francisco. More than 1400 PCs are networked at 40 offices in California and 6 out of state; the Novell and 3Com nets are connected by an IBM mainframe net. Users get standard word processing, file manager, spreadsheet, and E-mail packages. Wells Fargo also writes proprietary software, primarily with Nantucket's *Clipper*, for credit analysis and other tasks. Mar reports that a pilot LAN test in one large office worked so well that the unit reduced its staffing budget even before installing the net, allowing the employee count to adjust through attrition.

"There's no question that networks changed how we do business," says John Good, manager of distributed systems at Turner Construction in New York City. The worldwide construction firm has placed over 30 Banyan Systems LANs, he says, and he expects that number to triple in the next two to three years. "We're now starting to see a number of [construction] projects themselves putting in nets," Good adds.

Turner is tapping PC nets to replace minis as front ends for mainframes and has been eliminating costly leased phone lines in favor of dial-up lines. In addition to generic applications, the net hosts packages that cover project/cost forecasts and management detail in great depth. Many of these programs were brought down from the mainframe and are more functional and easier to use than their predecessors; they often give faster results as well. Overall, Good sees "a lot of user enthusiasm, although users have been almost overwhelmed by the number of things that have to be assimilated."



KENNETH CHEN

Turner's John Good notes local networks may mandate local responsibility for data.

YVONNE HEMSEY

While UPS networks provide familiar packages to users, "what drives us is applications we do ourselves," says Marc Dodge.

"The network has revolutionized us," declares July Verdon, who aided a network project at Treatment Alternatives for Special Clients (TASC) in Chicago. The nonprofit agency acts as an intermediary between criminal courts and drug treatment facilities. Tracking clients all the way through parole takes "six months to six years, sometimes longer, and there's paperwork every step of the way," she says.

"Everything that would go into a client file now goes on line," into custom *DataFlex* applications, Verdon explains. TASC's Chicago office has about 60 PCs on a Novell LAN; other offices around Illinois have been equipped with smaller nets. Employees can quickly find needed information—even if it's at other offices—because the nets are connected. "If someone in Peoria needs information on a case that's in Springfield, it takes just minutes," she says. "Before, it took days." TASC also taps *Higgins* for E-mail, which has proved particularly helpful for immediate agencywide notification of new laws or regulations.

TECHNICAL TOUCHSTONES

Users emphasize the need for careful net planning. Along these lines, Wells Fargo's Mar calls for hardware and software standards (for instance, a limit of five machine configurations). He also stresses careful, step-by-step moves into production. "If you take shortcuts, you just get burned." Turner's Good adds that even a system that's been extensively debugged may break down later as components are updated.

As LAN applications become central to an operation, service and support prove essential. "Service has to be figured in as a fundamental cost," Mar says. Even so, finding effective service isn't always simple. "The tough part is, there's not a single vendor that can get everything working and keep it working," he maintains. That mandates in-house expertise.

But the greatest barriers to leveraged net investments aren't unmet product and service needs—they're cost and organizational issues. Take the National Education Association, the union of 1.8 million teachers in public education, which handles office automation via 200 PCs on a Banyan LAN at its Washington, D.C., headquarters. With nets, the NEA has slashed the cost of connecting to its mainframes, and its state affiliates are doing likewise, says Brice Bonwill, system specialist. Potentially, NEA locals could dial into a state's net and get everything available at state and national levels, Bonwill notes. However, expense is a deterrent, he says, "and the state doesn't want to lose control of the information."

Another hurdle: "A majority of people think you need a big box to do big processing," says one network advocate. "The main battle we're still waging is in changing people's thinking." ●

Eric Bender is a senior associate editor for PC World.

REMEMBER THE END USER

In large organizations, mission-critical applications running on a PC LAN (or anywhere else) are written by professional in-house developers. But the professionals need to observe the first law of applications: Pay serious attention to end users.

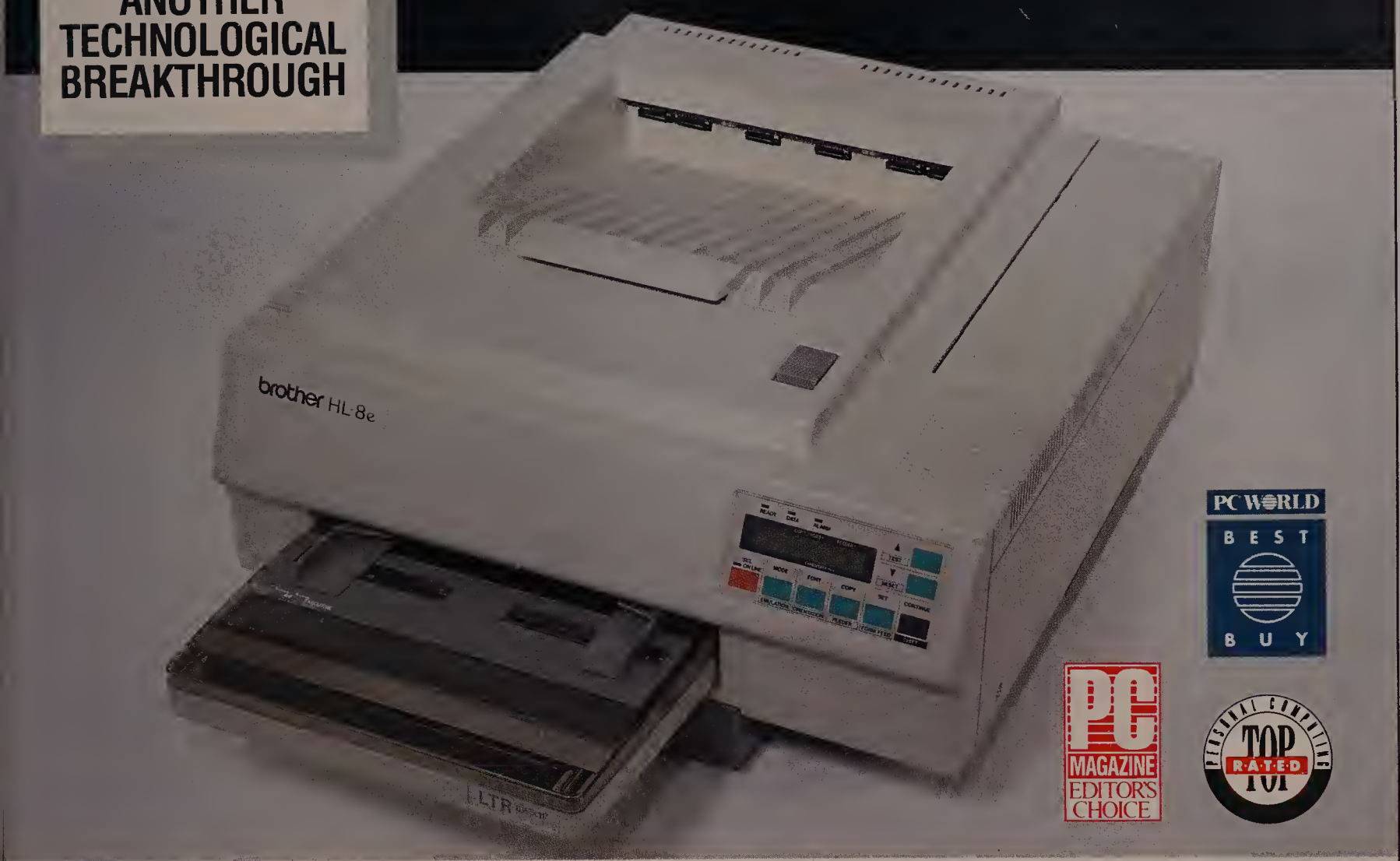
Shearson Lehman Hutton's bond trading group ensures that this is done, via an organizational approach, notes Mark Rufeh, senior vice president. The PC development group that supports the back office reports to him rather than to Shearson's central information systems group. "The people who build the system and the people who use the system are the same, and they're all married to the process," Rufeh says.

Once the software is built, user training becomes critical—particularly since many more employees are working on PCs than the handful who once stared into dumb terminals. "And as you move from a centralized environment, with everything pretty much controlled from one point, to a highly decentralized environment, the responsibilities also shift," says John Good, manager of distributed systems at Turner Construction. "If you forgot to back up your data, don't call me and start moaning."

Wells Fargo created an aggressive on-site training program that lets employees "walk away with something directly relevant to their jobs, not just with 284 spreadsheets," says Kingsley Mar, systems vice president for research and development. While some veteran employees dreaded the LAN, "it really didn't impact any of them." The net provided a complete but controlled environment, so experienced PC users didn't enjoy much of an edge. —*E. B.*

BEST OF CLASS.

ANOTHER TECHNOLOGICAL BREAKTHROUGH



THE BROTHER HL-8 SERIES LASER PRINTERS...INCLUDING THE POPULAR ENHANCED AND THE NEW POSTSCRIPT® MODELS.

Right from the start, the Brother HL-8 series was in a class by itself. And it keeps getting better...with all the speed and high resolution you expect...plus the special features you'd have designed in yourself if you could.

Brother HL-8e...the "value-added" laser.

The HL-8e gives you plenty of bang for the buck. It offers 44 internal fonts, and a standard one megabyte of memory – with an option of two megabytes more. It also offers a host of emulations that include HPGL and H-P Series II compatibility...which makes the HL-8e ideal for CAD/CAM, word processing and desktop publishing applications.

Even better, you get all this plus an impressive list of functions at a touch of our simple control panel.

Brother HL-8PS...PostScript compatible and very smart.

The HL-8PS packs a full two megabytes of memory...more than twice that of an ordinary laser printer. You can add up to four megabytes more to handle even the most sophisticated desktop publishing jobs. The HL-8PS is also compatible with today's popular software and any microcomputer, including an Apple® Macintosh™, using the optional AppleTalk® interface.

Add PostScript compatibility, 35 fonts and an attractive price... and it's everything you'd want in a printer...and more.

But the best thing is to see for yourself. For the name of your nearest Brother dealer, call: **1-800-284-2844, Ext. 4616.** Brother International, Somerset, NJ 08875-6714.

Apple and AppleTalk are registered trademarks and Macintosh is a trademark of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc.

See us at COMDEX Booth #1116

We're at your side.

brother®

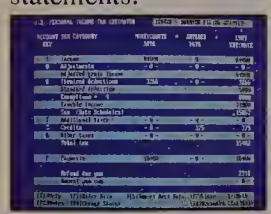
BROTHER INDUSTRIES, LTD. Nagoya, Japan

Circle 15 on reader service card

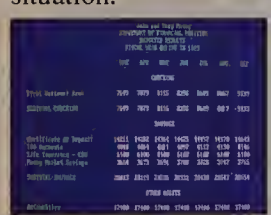
MONEYCOUNTS 6.0

FROM PRICE TO PERFORMANCE . . . THERE'S SIMPLY NO COMPARISON!

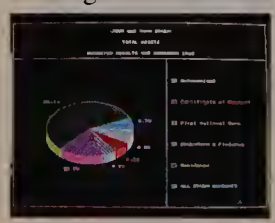
MONEYCOUNTS' smart account balancer makes fast work of even the toughest bank statements.



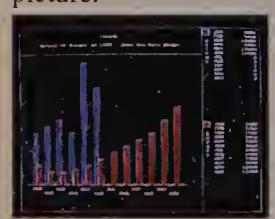
MONEYCOUNTS' Tax Estimator helps you quickly size up your federal tax situation.



All reports can be displayed to screen and easily viewed using vertical and horizontal title locking.



3-D pie charts let you quickly visualize your complete financial picture.

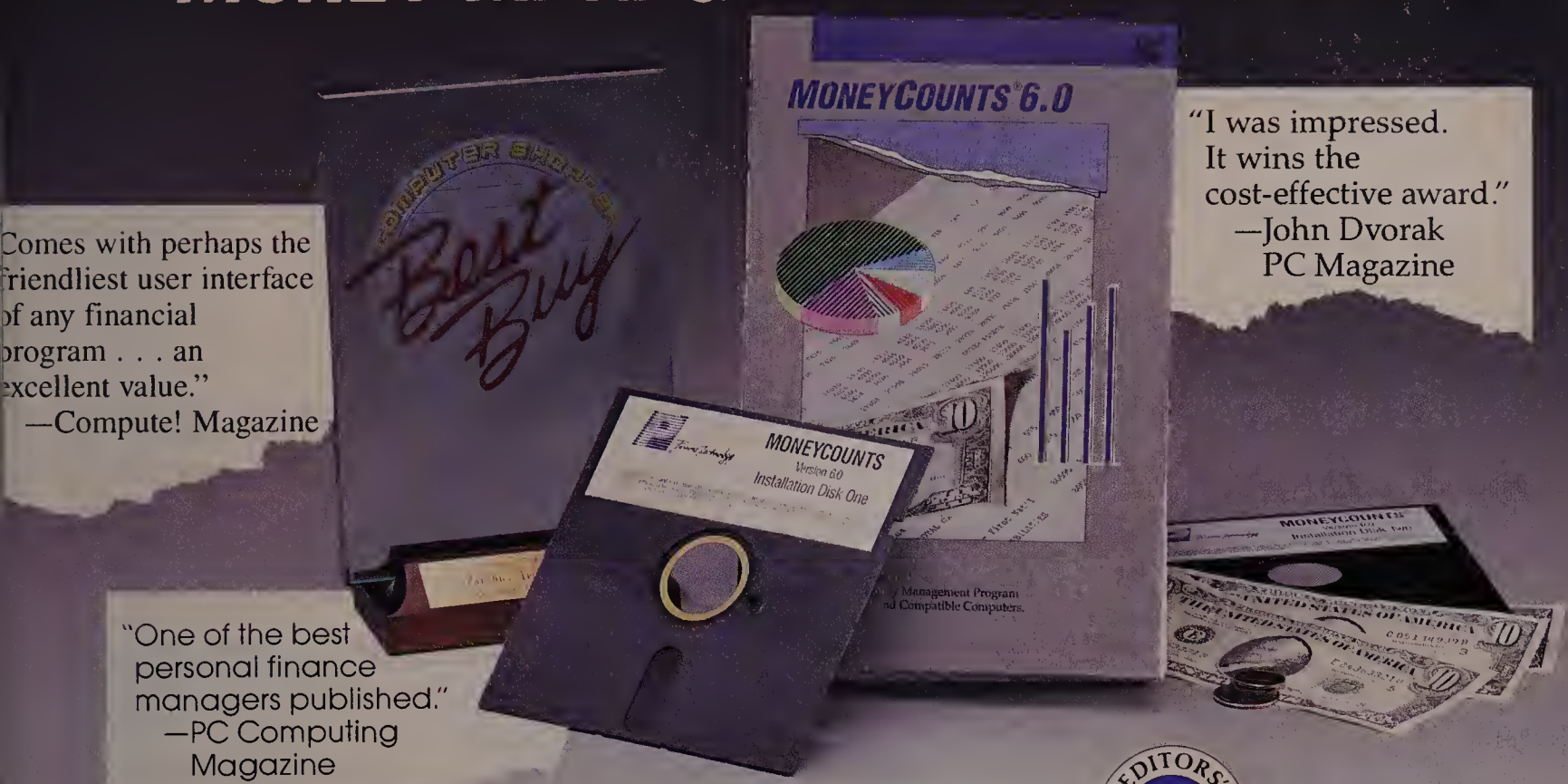


3-D bar charts let you easily compare your actual and budgeted results.

	MONEYCOUNTS*	QUICKEN*	MANAGING YOUR MONEY*	DOLLARS & SENSE*
Version	6.0	3.0	5.0	3.1
Manufacturer	Parsons Technology	Intuit, Inc.	MECA Ventures, Inc.	Monogram Software, In
Suggested Retail Price	**$35.00**	**$59.95**	**$219.98**	**$179.95**
Account Balancer	YES	YES	YES	YES
Automatic Error Finder	YES	NO	NO	NO
Accounts Can Be Added When Entering Transactions (Data)	YES	YES	YES	NO
Financial Reports				
Actual Financial Results	YES	YES	YES	YES
Month and Year to Date	YES	YES	YES	YES
All Months On One Report	YES	YES	YES	YES
Budgeted Financial Results	YES	YES	YES	YES
Actual Compared to Budget	YES	YES	YES	YES
Actual Compared to Prior Month	YES	NO	NO	NO
General Ledger Report	YES	YES	NO	NO
Accountant's Trial Balance	YES	NO	NO	NO
Net Worth Computation	YES	YES	YES	YES
Inquiry Reports				
Check and/or Deposit Register	YES	YES	YES	YES
Account Analysis	YES	YES	YES	YES
All Transactions with Party	YES	YES	YES	YES
Cash Requirements Forecast	YES	YES	YES	YES
Aged Invoices Payable	YES	NO	YES	YES
Reports Export to Lotus or Quattro	YES	YES	YES	YES
Graphics	YES	NO	YES	YES
Bar Charts	YES	NO	YES	YES
Pie Charts	YES	NO	YES	NO
Optional Password Protection	YES	YES	NO	YES
Financial Calculator	YES	NO	YES	YES
Prints Amortization Schedules	YES	NO	YES	YES
Prints Accumulation Schedules	YES	NO	YES	YES
Mail List Manager	YES	NO	YES	YES
Prints Address Labels and Index Cards	YES	NO	YES	YES
Prints Telephone Directory	YES	NO	YES	NO
Mail Merge with Word Processor	YES	NO	YES	YES
Check Writer	YES	YES	YES	YES
Prints Laser Checks	YES	YES	YES	NO
Prints Any Pin-Feed Check	YES	NO	YES	YES
Personal Income Tax Estimator	YES	NO	YES	YES
Pop-up Note Pad	YES	NO	YES	YES
Pop-up Math Calculator	YES	YES	YES	YES
Optional Canadian Features				
International Dating	YES	YES	NO	NO
International Terminology	YES	NO	NO	NO
Capacity				
Total Number of Accounts Per File	999	255	**	120
Total Number of Open Transactions	100,000	65,535	**	4,000

*Trademarks of their respective manufacturers. **Varies based on RAM memory and disk space available.

ANNOUNCING THE NEW $35 MONEY MANAGEMENT SOLUTION...



"Comes with perhaps the friendliest user interface of any financial program . . . an excellent value."
—Compute! Magazine

"I was impressed. It wins the cost-effective award."
—John Dvorak
PC Magazine

"One of the best personal finance managers published."
—PC Computing Magazine

GUARANTEED.

"MONEYCOUNTS is one of the finest examples of just how good inexpensive software can be."
—Leonard Hyre, PCM Magazine

EDITORS' PCM CHOICE AWARD

We invite you to examine MONEYCOUNTS. ***It's the clear choice for home and business.*** MONEYCOUNTS is CPA designed, easy-to-use, menu-driven with on-line help, and requires no accounting experience. You'll appreciate the ease with which MONEYCOUNTS...

- Manages your cash, checking, savings & credit cards.
- Prepares your budget and compares it against your actual results.
- Quickly balances your checkbook.
- Prints eight types of financial statements (including net worth) and six types of inquiry reports.
- Prints general ledger and accountant's trial balance.
- Lets you optionally save any report to disk or display it on screen. ***You can even export directly to Lotus 1-2-3*, or Quattro.****
- Prints any type of pin feed (or laser) check.
- Handles up to 999 accounts and 100,000 transactions a year.
- Estimates your personal income tax.
- Links directly with the *PERSONAL TAX PREPARER* software.
- Analyzes financing options & savings programs — computes interest rates & loan payments — prints amortization and accumulation schedules.
- Manages mail lists — prints labels and index cards.
- Displays and prints three dimensional graphics (both pie charts and bar charts).
- Provides password protection, fiscal year support, pop-up notepad, pop-up calculator, DOS shell, automatically backs up your data files and much more.

Circle 130 on reader service card

Parsons Technology
375 Collins Road NE
Cedar Rapids, Iowa 52402

MEMBER DIRECT MARKETING ASSOCIATION

Hard to believe the low price? Don't worry! There's no catch. ***If you're not 100% satisfied, return MONEYCOUNTS within 30 days for a full refund*** *(excluding shipping).*

Over 120,000 users have decided in favor of MONEYCOUNTS! Order today and see for yourself!

For Same Day Shipping
VISA, MASTERCARD & C.O.D. ORDERS CALL

1-800-223-6925

(In Canada call 319-395-7300.)
Mon. - Fri. 8:30 a.m. to 9:00 p.m.,
Sat. 9:00 a.m. to 5:00 p.m. CST
Or send check or money order payable to Parsons Technology

Parsons Technology
Dept. W
375 Collins Road NE
Cedar Rapids, Iowa 52402

MONEYCOUNTS® 6.0
$35 + $5 shipping
NOT COPY PROTECTED
INCLUDES PRINTED MANUAL AND *FREE* TECHNICAL SUPPORT

NAME _____
ADDRESS _____
CITY _____
STATE/ZIP _____ PHONE _____
CHECK ☐ MONEY ORDER ☐ VISA ☐ MASTERCARD ☐
CARD # _____ EXP. DATE _____

MONEYCOUNTS 6.0 requires an IBM*/Tandy*/Compaq* or compatible computer, 384K or more RAM, DOS 2.0 or higher, 2 disk drives (or a hard disk). Works with all printers and monitors. Add $10 shipping/handling outside North America. Iowa residents, please add 4% sales tax.

*Lotus 1-2-3, Quattro, IBM, Tandy and Compaq are all registered trademarks of Lotus Development Corp., Borland International, Inc., International Business Machines Corp., Tandy Corp and Compaq Computer Corp. respectively.

dBASE Helpers

You don't have to be a developer to get more out of dBASE. Novices and power users alike can improve their productivity with these time-saving utilities.

dBASE owes much of its popularity to the thousands of third-party utilities that support it. The vast majority of them are aimed at programmers, but this Buyers' Guide focuses on utilities designed for the average end user: report generators, search utilities, and other programs that either help users work more efficiently with *dBASE III Plus* and compatibles or provide some missing functionality.

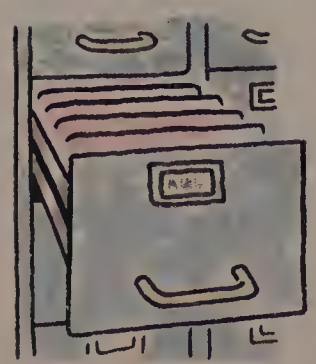
In the *dBASE* world, the line between what constitutes a programmer and a casual user isn't always clear, and some tools will be used by both. For example, the query builders presented here are also helpful to programmers. By the same token, application generators aren't covered here, though some target end users.

All the products listed in the guide are *dBASE III Plus*–compatible. Many also work with clones such as *Foxbase* and *dBXL* and compilers such as *Quicksilver* and *Clipper*, and some work with *dBASE IV*. Look over the symbols at the end of each product description to make sure the utility works with your program.

This guide focuses on commercial products, but alternative shareware products abound. Check your favorite BBS, or buy EMS's "dBUtility Directory," which lists hundreds of public domain, shareware, and commercial *dBASE* utilities (available from EMS, 4505 Buckhurst Ct., Olney, MD 20832; 301/924-3594, 301/963-2708 [fax]).

This guide covers products in eight categories: report generators, graphics utilities, query builders, file conversion utilities, data compression utilities, search utilities, data salvage utilities, and memory managers. Some are stand-alone programs, able to read .DBF files directly; others are TSRs that pop up or work transparently from within *dBASE*.

Matt Lake



There are several key features to look for. Third-party report generators greatly improve on the limited reporting skills of *dBASE III Plus* and its clones. Most offer enhanced layout tools and better font and printer support. Some supply canned formats and let you interactively fine-tune a report on screen without having to print it out at every stage. Band orientation—a *Paradox*-style report interface—makes it easier to format discrete portions of your document.

If you've already spent $500 on a generic graphics program that can use *dBASE* data, all well and good. But if you want a cheaper alternative just for *dBASE*, you'll find utilities that build business graphics from .DBF files without tedious conversion. A *dBASE* graphics package lets you graph either whole .DBF files or selected data. Other graphics utilities covered here are primarily scanner control packages that let you tag records with scanned images to turn *dBASE* into an image data base.

dBASE IV introduced both query by example (QBE)—a helpful table-based querying method—and structured query language (SQL) to the *dBASE* world, but *III Plus* and its compatibles offer only limited tools for selecting and analyzing data. A third-party query builder can help you get a better view of your data using QBE. One product, *dQuery*, also provides SQL queries.

If you need to pass *dBASE* records to another data manager or a word processor or pull in data from *1-2-3* or another program, a file conversion program is indispensable. A good file converter supports numerous format conversions and automatically formats data and adjusts field lengths. You should also be able to convert selected fields or records as well as whole files.

Data compression utilities reduce the amount of disk space taken up by data and program files, an especially useful option if a data base holds many empty fields. Some can squeeze data as you enter it, and some also encrypt data.

Can't find that missing record? Need to purge your data base of duplicates? A search utility can help. Most can find the right record using a single word, and some catch typing and spelling errors by recognizing approximate matches.

If a data base becomes corrupted, you'll need the help of a salvage utility. *dBASE* files can be damaged in two ways. Internal damage happens when file headers get overwritten, records are offset, or spurious characters appear. Lost clusters of data and DOS-level damage to directories or file allocation tables can also spell catastrophe. A good salvage utility diagnoses such problems and lets you decide whether to repair them automatically or use built-in tools to correct the problem manually.

While you're running *dBASE*, you can use the Run command to load another program—but only if you've got enough RAM. If you strike out, a memory manager can ease the crunch by temporarily moving *dBASE* files to disk without closing them down.

Finally, we cover a few utilities that defy categorization. If you need on-line help or *dBASE* just isn't fast enough, the solution could be here. ●

Matt Lake is an editorial assistant at PC World.

Key to Compatibility

3+	dBASE III Plus
4	dBASE IV
C	Clipper
d	dBXL
F	Foxbase
Q	Quicksilver

REPORT GENERATORS

dbPublisher 2.0

More than just a report writer, *dbPublisher* calls upon sophisticated desktop publishing to integrate data base, spreadsheet, word processing, and graphics files into a polished document. It features numerous levels of grouping and includes formatting templates. From a mouse-run windowing interface, you can choose from a variety of fonts and HP and PostScript laser printers. Other features include bar-code generation and math and statistical functions. List price: $695.

3+ 4 C d F Q

Digital Composition Systems
1715 W. Northern Ave.
Phoenix, AZ 85021
800/527-2506, 602/870-7667, 602/870-7668 (fax)
Reader service no. 615

dTrieve 1.2

Designed for simplified reporting with a minimum of keystrokes, *dTrieve* lets users choose canned formats from pop-up windows. It supports nine levels of grouping. List price: $99.

3+ 4 C d F Q

Datamate
4135 S. 100th East Ave. #128
Tulsa, OK 74146
800/444-6283, 918/664-7276
Reader service no. 616

R & R Relational Report Writer, Version 3B

R & R is a band-oriented report writer that offers eight levels of grouping. It can generate reports from up to ten data bases, with multiple relations from each file. Using a *1-2-3*–style interface, you can control a report's pitch, font, orientation, and margins. The program also provides mail merge and mailing label options. The run-time version's unlimited-use license (no additional fee) permits you to attach the utility to *Clipper* object modules. You can buy a code generator to modify report code and add it to applications. List price: $149, code generator $149.

3+ 4 C d F Q

Concentric Data Systems
18 Lyman St.
Westborough, MA 01581
800/325-9035, 508/366-1122, 508/366-2954 (fax)
Reader service no. 617

Snow Report Writer 3.02

An on-line tutorial and context-sensitive help ease the user into the

ILLUSTRATIONS BY ROLLIN MCCRAIL

Snow Report Writer's window-oriented interface. It can merge and set multiple relations between data from 15 files, and it imposes no grouping limits. You can print reports to screen, to disk, or to a printer. Other features include sort and math functions, mailing labels, and the ability to import spreadsheet and word processing files. List price: $695, LAN version $995.
3+ 4 C d F Q
Snow Software
2360 Congress Ave.
Clearwater, FL 34621
800/283-7669, 813/784-8899, 813/786-5904 (fax)
Reader service no. 618

For more information about all products in this section, circle reader service no. 902.

GRAPHICS UTILITIES

dGE 3.0
dGE is a TSR that can turn selected *dBASE* data into bar, 3-D bar, polyline, polyvector, pie, exploded pie, high/low/close, and time series charts. *dGE* works with many dot matrix and laser printers, plotters, and graphics cards. (*Clipper* users must compile and link *dGE*.) List price: $195.
3+ 4 C F Q
Pinnacle Publishing
P.O. Box 8099
Federal Way, WA 98003
800/231-1293, 206/941-2300, 206/946-1491 (fax)
Reader service no. 619

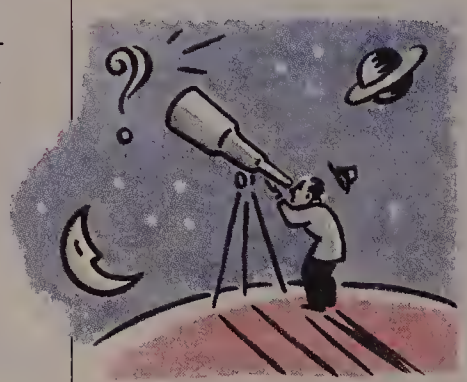
dPict 1.1
dPict reads data directly from .DBF files to produce bar, line, and pie charts and histograms. The utility stores the graphs in a .PIC file. Scaling is not user adjustable. List price: $49.95.
3+ 4 C d F Q
Paragon Technical Services
1581 Garland Ave.
Tustin, CA 92680
714/832-3327, 714/730-0815 (fax)
Reader service no. 620

FoxGraph
FoxGraph translates .DBF files into ASCII text, then produces business graphics from a library of 15 chart and graph styles, including multiple pies and horizontal and vertical stacked bars. You can also choose from 32 3-D graphics formats, including bars, pyramids, ribbons, and floating planes. List price: $295.
3+ 4 d F
Fox Software
134 W. South Boundary
Perrysburg, OH 43511
419/874-0162, 419/874-8678 (fax)
Reader service no. 621

Scanbase API 2.0
Scanbase API is a scanner control package that can also turn *dBASE* into an image data base for personnel records, security checks, and other uses. You can load it within *dBASE*, attach .PCX files to selected records, and display them side by side. List price: $395.
3+ 4 C d F Q
Scanbase Graphics
16 Robertson Rd.
Morristown, NJ 07960
201/644-9090, 201/360-2715 (fax)
Reader service no. 622

SilverPaint Library 1.13
SilverPaint is a graphic enhancement library that can attach .PCX files such as scanned images to any *dBASE* record. It also contains graphics primitives to let you draw your own lines and circles. The program's library of sounds can be used to sound alerts for such incidents as data security breaches. List price: $99.95.
3+ 4 C d F Q
SilverWare
3010 LBJ Frwy. #740
Dallas, TX 75234
214/247-0131, 214/406-9999 (fax)
Reader service no. 623

For more information about all products in this section, circle reader service no. 903.



QUERY BUILDERS

dQuery 3.0
Compatible with *dBASE* and *1-2-3* file formats, *dQuery* provides a QBE system similar to IBM's Query Management Facility (QMF). It also generates SQL commands. It can use relational joins to query data base and spreadsheet files at the same time and can handle 32 files per query. You can select data from a .DBF file and save it to a spreadsheet, and vice versa. The package also includes a report writer with eight grouping levels. List price: $195.
3+ 4 C d F Q
Quadbase Systems
790 Lucerne Dr. #51
Sunnyvale, CA 94086
408/738-6989
Reader service no. 624

Query 2.0
Query reads .DBF files directly and uses pulldown menus to guide users through a proprietary QBE-like query-building process. Additional features include a report writer and a graphics module for displaying histograms. List price: $88.
3+ 4
YSC Technology
47 Protea Garden
Willowdale, Ontario
M2K 2W5, Canada
416/733-0228
Reader service no. 625

Seekit 1.4
Seekit provides a QBE system for sorting data and index files. With its function key interface, you can query up to 42 fields and five data bases. Compiled index files are not supported, but *Seekit*'s run-time version can be linked to *Clipper* object modules. Source code is included and can be used without royalties. List price: $199.90.
3+
Integrated Data Technologies
4813 Springfield Ave.
Philadelphia, PA 19143
215/726-6124
Reader service no. 626

For more information about all products in this section, circle reader service no. 904.

FILE CONVERSION UTILITIES

Data Junction 3.0
Data Junction is a two-way file translator. The starter version translates between *dBASE*, *1-2-3*, and *WordPerfect* secondary merge files and more than a dozen other for-

mats. The professional version includes *Paradox*, *R:base*, *Excel*, and others. List price: starter $99, professional $199.
3+ 4 C d F Q
Tools and Techniques
1620 W. 12th St.
Austin, TX 78703
800/444-1945, 512/482-0824
Reader service no. 627

DBMS/Copy 2.0
DBMS/Copy converts the format of whole files or selected fields between *dBASE*, *1-2-3*, *Symphony*, *Quattro*, *Paradox*, *Excel*, *PC-File*, and over 50 other programs. *DBMS/Copy Plus* adds the ability to recalculate during file conversion. List price: $195, Plus version $295.
3+ 4 C d F Q
Conceptual Software
P.O. Box 56627
Houston, TX 77256
800/782-8969, 713/667-4222, 713/667-3329 (fax)
Reader service no. 628

MacroPIK'r 1.4g
MacroPIK'r performs two-way conversions between .DBF files and .WKS, .WK1, .DIF, .DBS, and SYLK files. It provides a mouse-oriented interface and includes a macro capability. List price: $249.
3+ 4 C d F Q
Samkhya Corp.
P.O. Box 142
Petaluma, CA 94953
800/442-0012, 707/763-2800
Reader service no. 629

PC Converter Plus 1.3
This utility converts files between *dBASE*, *1-2-3*, *dBXL*, *R:base*, *Symphony*, and other spreadsheet and data base programs. *PC Converter Plus* enables users to change field names in the converted file, expanding them to up to 22 characters. List price: $79.95.
3+ F
Softsync
162 Madison Ave.
New York, NY 10016
212/685-2080, 212/685-6322 (fax)
Reader service no. 630

Transformer
Transformer allows users to convert selected fields from *dBASE* files into *1-2-3*- or any *1-2-3*–compatible spreadsheet format, including *Quattro* and *Excel*. You can also set transfer conditions so that only certain records are converted. List price: $149.
3+ C
SourceMate Information Systems
20 Sunnyside Ave.
Mill Valley, CA 94941
415/381-1011, 415/381-7451 (fax)
Reader service no. 631

For more information about all products in this section, circle reader service no. 905.

DATA COMPRESSION UTILITIES

Free Space 1.1
Free Space is an archiving utility that compresses and encrypts .DBF and ASCII files. Tate claims that compression ratios are as high as 6 to 1. List price: $69.95.
3+ 4 C d F Q
Tate Publishing
2101 Hamilton Ave.
Torronce, CA 90502
800/234-8283 ext. 602
Reader service no. 632

NewSpace 1.07
NewSpace is a TSR that compresses data base, spreadsheet, or word processing data as you enter it. *dBASE* files can be reduced to less than half their size. An unerase feature retrieves the five most recently deleted files. List price: $69.95.
3+ 4 C d F Q
Isogon
330 Seventh Ave.
New York, NY 10001
800/662-6036, 212/967-2424, 212/967-3198 (fax)
Reader service no. 633

Squish Plus 1.05
Because DOS recognizes it as a device driver, *Squish Plus* is compatible with any program. It can compress files written to hard or floppy disks and does not need to uncompress an entire file to read or write to it. *Squish Plus* can also password protect records. List price: $99.95.
3+ 4 C d F Q
Sundog Software
264 Court St.
Brooklyn, NY 11231
718/855-9141
Reader service no. 634

For more information about all products in this section, circle reader service no. 906.

SEARCH UTILITIES

DataFinder 4.01
This memory-resident utility can search globally for precise or approximate matches for any field, including memo fields. *DataFinder* performs case-sensitive searches and lets you append, edit, delete, and undelete records. It has logical operators and lets you switch data bases, directories, and drives on the fly. List price: $99.95.
3+ 4 C d F Q
TSR Systems Ltd.
1600B Moin St.
Port Jefferson, NY 11777
516/331-6336, 516/331-6377 (fax)
Reader service no. 635

dDupChk Duplicate Recognition 1.0
dDupChk searches for duplicate records and finds near matches using the Soundex algorithm. It features an on-screen editor for indexing (but not directly deleting) extraneous entries. List price: $135.
3+ 4 C d F Q
Prairie Software
11455 Valley View Rd.
Eden Prairie, MN 55344
800/356-6821, 612/941-1276, 612/941-8924 (fax)
Reader service no. 636

Friendly Finder 4.3
Using a proprietary algorithm, *Friendly Finder* makes case-insensitive searches for matching or near-matching records. You can choose between TSR or stand-alone operation. It searches up to eight fields at a time and lists matches in a window, in descending order of similarity to the look-up sample. *Friendly Finder* prohibits editing or deleting, making it safe for multiuser data base searches. List price: $99.
3+ C d F Q
Proximity Technology
3511 N.E. 22nd Ave.
Fort Lauderdale, FL 33308
800/543-3511, 305/566-3511, 305/566-2088 (fax)
Reader service no. 637

UltraSearch 1.1
This stand-alone utility makes precise searches on *dBASE* files for strings as short as a few characters. Its edit feature lets you modify files, flag records for deletion, and conceal confidential data. Users can store search results in a log file. List price: $79.95.
3+ 4 C d F Q
Index Applications
8546 Broodwoy #208
Son Antonio, TX 78217
800/334-8099, 512/822-4818, 512/828-5074 (fox)
Reader service na. 638

Far mare infarmation abaut all praducts in this sectian, circle reader service no. 907.

DATA SALVAGE UTILTIES

dBASE File Recovery 1.0
Missing file structures, damaged data files, incorrect record counts, and FAT glitches are just some of the internal and DOS-level problems *File Recovery* corrects. Its interface is modeled closely on *dBASE IV*'s, and on-line help is available. It automatically fixes corrupt headers, copying the data base to a new file, and diagnoses other problems that the user can fix with a library of built-in tools. It can also recover deleted or zapped files. List price: $99.95.
3+ 4 C d F Q
Tate Publishing
2101 Homilton Ave.
Torronce, CA 90502
800/234-8283 ext. 602
Reader service na. 639

dSalvage 1.44
dSalvage Professional 2.11
dSalvage provides diagnostic and repair tools for .DBF files suffering internal or DOS-level damage. On-line help and menus lead users from diagnosis to repair. Editing tools enable you to access and change records. The Professional version lets you build headers and find and delete control and graphics characters. This *PC World* Best Buy was reviewed in *The Software Shelf, PCW,* May 1989. List price: $99.95, Professional $199.95.
3+ 4 C d F Q
Comtech Publishing Ltd.
P.O. Box 456
Pittsford, NY 14534
800/456-7005, 716/586-3365
Reader service na. 640

QuickFix-2 1.08
QuickFix-2 diagnoses most file problems quickly. It uses the DOS directory as its measure—assuming the directory is intact. You can replace a damaged header with a backup file's and automatically remove unwanted characters. You can even correct offset data and erroneous record counts on screen before saving the fix to disk. *QuickFix-2* tracks up to 512 bad records, which you can print out as a repair log. List price: $49.95.
3+ C d F
Hilco Software
11266 Bornett Volley Rd.
Sebostopol, CA 95472
707/829-5011
Reader service na. 641

Far mare information about all praducts in this sectian, circle reader service no. 908.

MEMORY MANAGERS

AutoSwap 1.2
AutoSwap is loaded along with *dBASE* via a switch and uses as little as 5K of RAM. Whenever the *dBASE* Run command is issued, *AutoSwap* saves data base and program files to disk to free up memory to run the other application. List price: $49, network/run-time versions $199.
3+ 4 C d F Q
The Lambda Group
555 De Horo St.
Son Froncisco, CA 94107
800/873-7927, 415/626-4545
Reader service no. 642

Dr. Switch
Dr. Switch, previously called *Switch It*, is a memory-management TSR that lets you access other applications while running *dBASE*. It trades *dBASE* code and data from RAM to disk in 256K and larger blocks. Only the run-time version supports dBASE compilers. List price: $59.95, run-time version $79.95.
3+ 4 C d F Q
Black & White Int'l
23 W. 88th St.
New York, NY 10024
212/787-6633
Reader service na. 643

Trading Places 1.0
Trading Places is a *dBASE* memory manager that also works with *1-2-3*, *WordPerfect*, and other applications. It swaps code and data between RAM and disk and can manipulate up to 32 TSRs such as *SideKick*, using a minimum of 14K itself. List price: $99.95.
3+ 4 C d F Q
Tate Publishing
2101 Homilton Ave.
Torronce, CA 90502
800/234-8283 ext. 602
Reader service na. 644

Far more informatian abaut all praducts in this sectian, circle reader service no. 909.

MISCELLANEOUS

dBASE On Line 2.0
Offering on-line help for all major dBASE dialects, *On Line* provides a reference for commands, functions, file structure, and error codes. Norton Guide's *Reference Engine* —included in the price— stays in memory, calling up help screens from its disk-based reference data base. List price: $149.
3+ 4 C d F Q
SofSolutions
440 Quentin Dr.
Son Antonio, TX 78201
800/622-6435
Reader service na. 645

dBoost 2.0
Using proprietary algorithms, this TSR speeds up dBASE applications, particularly as data bases grow. Advanced buffering and other functions can make applications run up to twice as fast. List price: $69.95.
3+ 4 C F Q
Isogon
330 Seventh Ave.
New York, NY 10001
800/662-6036, 212/967-2424, 212/967-3198 (fox)
Reader service no. 646

For mare infarmation abaut all praducts in this sectian, circle reader service na. 910.

DO NOT ATTEMPT WITHOUT COMPUSERVE.

Take control of your investments with the same fast and accurate trading information CompuServe provides to many of the top investment institutions on Wall Street.

Tap the time-saving power of electronic research by accessing valuable company data and financial statements from premier sources like Standard & Poor's, Value Line, and Disclosure II, or track the value of your investments using CompuServe's Quick Quotes℠ database. We'll even alert you with current news from Reuters and other top news providers on stock quotes you request.

Get up to 12 years of daily, weekly, or monthly pricing history on over 90,000 securities, and download it to your spreadsheet for further analysis.

Consult a weekly poll of Wall Street analysts with the consensus earnings estimates for each of over 3,500 companies. Then discuss information with your peers in CompuServe's Investors Forum. You can even download hundreds of freeware and shareware decision support tools.

Once you've made a decision, online discount brokers are standing by, ready to take your order 24 hours a day.

To join CompuServe, see your computer dealer. To order direct or for more information, write or call 800 848-8199. And stay on top of your investments.

Name _____

Address _____

City _____

State _____ Zip _____

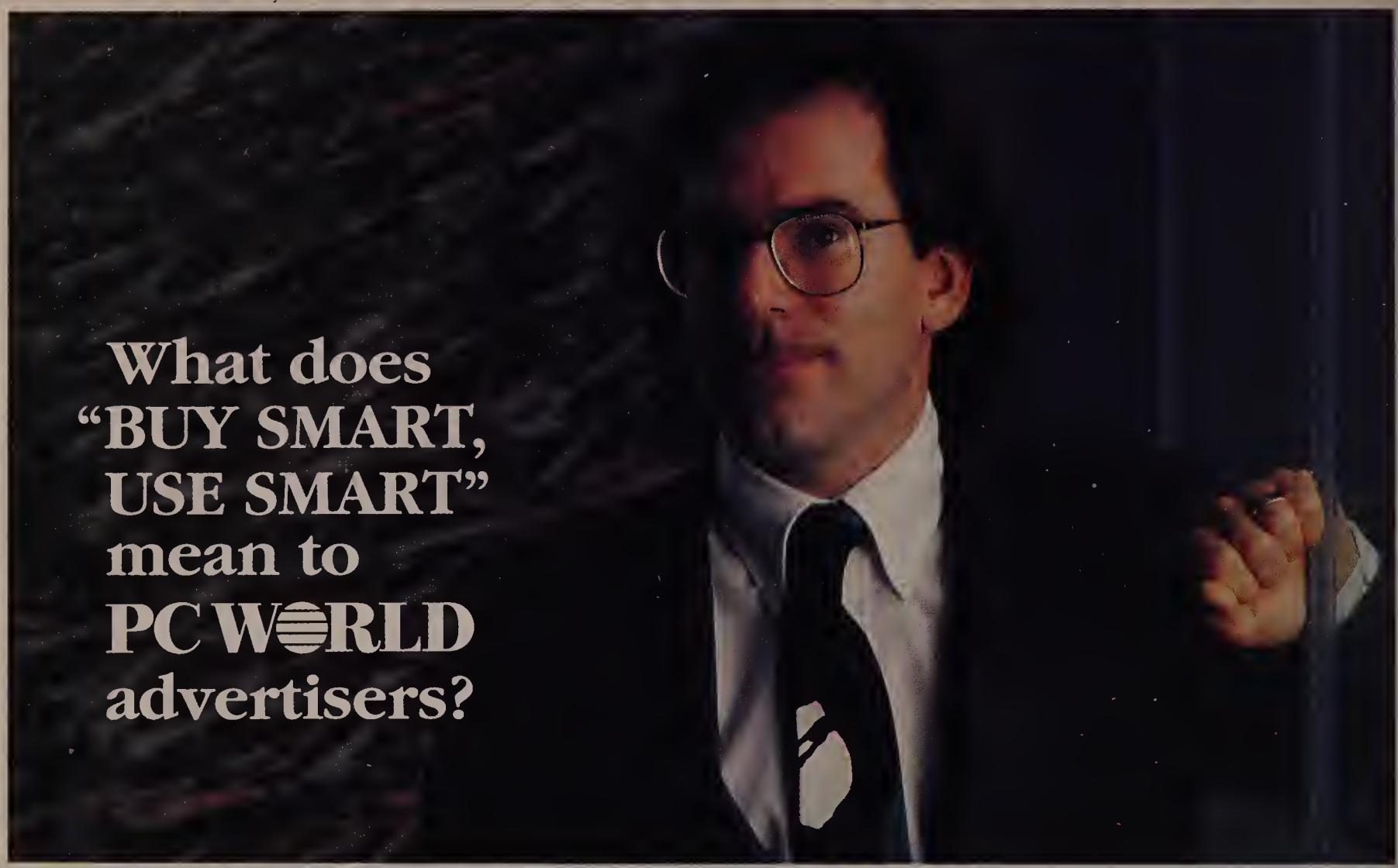
Telephone ( ) _____

CompuServe®

Advertising Dept., 5000 Arlington Centre Blvd.
P.O. Box 20212, Columbus, OH 43220

Circle 40 on reader service card

Richard Landry, editor-in-chief, *PC World*



A way to "sell smart."

Editor-in-chief, Rich Landry helps *PC WORLD*'s readers to "buy smart, and use smart." *PC WORLD* guides business buyers through the entire buying process, from purchase to integration to upgrade to trade-in. First, we deliver the essential product information they need to make smart PC buying decisions. Then we follow-up, month after month, with the answers, power tips and advice they need to use their PCs more productively. To them, *PC WORLD* delivers more value than other PC books.

A knowledgeable, sophisticated reader is a knowledgeable, sophisticated buyer. The reviews in *PC WORLD* meet the highest standards of objectivity. Our readers know that. Which is why *PC WORLD* is a smart place to advertise your product. There is no more credible editorial environment for your advertising message.

More receptive business buyers mean more sales for your product. Call Mark Glasner at **415-243-0500** to find-out more about how you can sell smart with *PC WORLD*.

PC WORLD is part of IDG's worldwide family of publication, exposition and research companies providing the best in information on the information technology industry.

International Data Group
5 Speen Street
Framingham, MA 01701-9171
(508) 875-5000

IDG

Answers for the Information Age.

Circle 900 on reader service card

If this is how you're saving for your future . . .

you need WealthBuilder™ by Money Magazine software

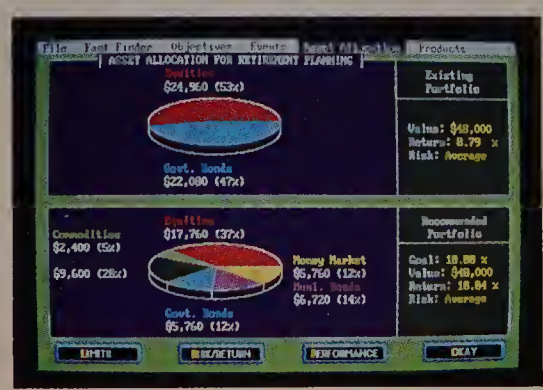
Sure, stashing your cash in a piggy bank might be an easy way to save for the future, but you don't get much of a return on your investment. What you really need is an unbiased, personalized financial strategy that will bring you better returns and allow you to achieve your financial goals. But that's not so easy, right?

Wrong.

Introducing WealthBuilder by Money Magazine, software that turns your computer into your own personal financial assistant. WealthBuilder by Money Magazine combines sophisticated investment technology with MONEY's straightforward way of talking about personal finance. In less time than it would take to count your pennies, you can develop and implement a sound financial plan that suits your risk and return needs. Here's how it works . . .

First, WealthBuilder by Money Magazine prompts you to enter your financial profile: assets, liabilities, income, expenses, and tolerance for risk. Then you enter your goals—purchasing a new home, sending your kids to college, even planning for retirement.

Taking that information into account, WealthBuilder by Money Magazine performs an asset allocation, choosing among stocks, bonds, and other investments. The program designs a diversified investment approach that matches your investment philosophy. With clear and striking graphics, it shows you how you should best invest your money to fulfill your goals.



"Minimize your risk & maximize your return."

But it doesn't stop there. WealthBuilder by Money Magazine dips into its database of up to 1400 mutual funds and 1600 stocks to pinpoint which ones are right for you. Research that would take you weeks to perform, now all within minutes. Then, each quarter print out your individualized Action Plan, a statement that tells you how to budget your savings, reviews and recommends specific portfolio investments, and provides a checklist against which you can measure your performance and objectives.

Now, for a limited time, sample WealthBuilder by Money Magazine for only $9.95 and receive a special bonus! Order the Preview Disk, containing actual tax and retirement tips, and you'll receive the MONEY Guide to the Basics of Personal Finance (a $3.95 value) and get a $10 rebate on your final purchase. Now that's a deal that won't break the bank.

Just write or call toll-free 1-800-346-2024.

☐ Yes, I'm banking on WealthBuilder by Money Magazine. Send me a Preview Disk and my copy of the Money Guide to the Basics of Personal Finance for only $9.95.

☐ Send me the full product on a 30-day MONEY-BACK GUARANTEE for $249.95 plus $7.50 shipping and handling. I'll also receive a FREE copy of MONEY's Making Your Money Count videotape. (PA & CT residents add state sales tax)

Name _____

Address _____

City, State, Zip _____

Circle one: IBM 5¼" IBM 3½" Macintosh

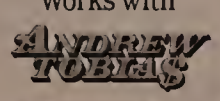
Payment enclosed

Charge my: VISA MC Amex Acct. # _____

Exp. Date _____ Signature _____

Send to: WealthBuilder Special Offer; Reality Technologies, Inc. 3624 Market Street, Philadelphia, PA 19104 or call 1-800-346-2024. PCW 11/89

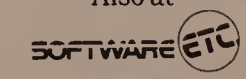
Works with



MANAGING YOUR MONEY®

and

Also at



Waldensoftware™

and other software retailers.

WealthBuilder by Money Magazine requires at least 512K RAM and a hard drive. IBM version also requires DOS 2.0 or higher.
WealthBuilder$ is a trademark of WealthBuilder$, Inc. licensed to Reality Technologies, Inc. MONEY is a trademark of The Time Inc. Magazine Company.
Andrew Tobias' Managing Your Money is a trademark of MECA Ventures, Inc. Quicken is a trademark of Intuit, Inc.

Easing Into WordPerfect Macro Programming

WordPerfect's recorded keystroke macros are useful, but not nearly as powerful as those built with its programming language. Creating a macro to automate block moves demonstrates how to harness that power.

Word Processing

Robert Lauriston

INSIDE TIPS & TECHNIQUES

DATA MANAGEMENT

212 **Flawless Form Letters With dBASE IV**
Polished mass mailings are a snap with these tricks.

DESKTOP PUBLISHING

216 **Eight Tips for Taming Ventura**
Steer clear of glitches, crashes, and baffling errors.

COMMUNICATIONS

220 **Money-Saving Tips for Dow Jones News/Retrieval**
Avoid steep charges with these expert techniques.

USER GROUP TIPS

224 • Reverse type with *Ventura*
• Easy indexing for *PC-File*
• A disk-space–saving batch file

With *WordPerfect* macros, you work hard at first to save time later. Nearly every new *WordPerfect* user is dismayed to learn that you have to press at least seven keys just to move a block of text. Even with a recorded keystroke macro, you can only pare the process to six. But if you edit that macro with *WordPerfect*'s built-in macro editor, you can add a block-copy capability, create a custom menu, and learn a lot about *WordPerfect*'s powerful macro programming along the way.

WordPerfect 5.0's 39 new macro commands and functions remove most of the program's previous limits. Now the macros can respond flexibly to keyboard input and let you design your own *WordPerfect*-style prompts and menus. In this article you'll create a recorded block-move macro and then soup it up with the macro editor, using variables, subroutines, and nine basic programming commands.

▶ Raw Material: A Recorded Macro

To start, you'll record a keystroke macro summoned with <Alt>-M (for Move) that moves a block of text.

1. You need sample text to build this macro. On a clear *WordPerfect* screen, type **Sample**, then press **<Home> <Cursor Left>** to position the cursor under the 'S'. Now press **<Ctrl>-<F10> <Alt>-M**, type **Block Move** to name the macro, and press **<Enter>** to begin recording keystrokes. The words 'Macro Def' flashing at

the lower right corner of the screen show that your keystrokes are being recorded.

2. Press <Alt>-<F4> to turn the Block function on.

3. Press <Ctrl>-<Page Up>P to insert a pause in the macro. When you use the macro, this pause will let you highlight the block.

4. Press <Home> <Cursor Right> to highlight the text 'Sample', and press <Enter> to end the pause.

5. Press <Ctrl>-<F4>BM<F1> to cut the block.

6. Finally, press <Ctrl>-<F10> to finish macro recording. The flashing 'Macro Def' prompt will disappear.

To use the macro, press <Alt>-M, highlight the desired text, and press <Enter> to cut the block. To paste the block elsewhere, press <Shift>-<F10> (Retrieve) and <Enter>.

Programming Builds a Better Macro

While useful, the initial version of the <Alt>-M macro is fairly limited. It includes only two block functions—move and delete—and doesn't tell you how to recall data from the delete buffer. And to automate copying a block, you'd have to record a second similar <Alt>-*key* macro. But with *WordPerfect*'s macro editor you can improve <Alt>-M with a copy feature and a prompt instead.

You can't build a macro from scratch with *WordPerfect*'s built-in macro editor; you can only modify an existing macro. You insert most regular *WordPerfect* commands by pressing the keys they're assigned to. Pressing <Alt>-<F4>, for example, enters the Block command. (Note that you can't just type in the command names.) To insert any of *WordPerfect*'s 39 macro programming commands, you use the editor's pop-up list. Just scroll through a list (or jump to a command by typing its first few letters) and press <Enter>. (In the macro editor, all commands are enclosed in braces.)

```
Macro: Edit

     File            ALTM.WPM

  1 - Description    Block Move

  2 - Action

     {Block}{PAUSE}{CHAR}1~
     {^]}1{^\}·{^V}M{^Q}ove;·
     {^]}2{^\}·{^V}C{^Q}opy;·~
     {DISPLAY OFF}{Move}b
     {CASE CALL}{VAR 1}~
     1~move~m~move~M~move~
     2~copy~c~copy~C~copy~~
     {Cancel}{DISPLAY ON}{PROMPT}
     Shift+F10-and-Enter-to-retrieve-block.~
     {QUIT}
     {LABEL}move~m{RETURN}
     {LABEL}copy~c

ret                                  (Name Search; Enter or arrows to Exit)
```

```
{RESTART}
{RETURN}
{RETURN CANCEL}
{RETURN ERROR}
{RETURN NOT FOUND}
{SPEED}100ths~
{STATE}
```

The Macro editor's pop-up list of programming commands appears in the upper right of the screen. A keystroke pulls the command into the editor's boxed work area.

▶ Building a Macro Step by Step

To begin modifying the <Alt>-M macro, press <Ctrl>-<F10> <Alt>-MEA to load it into the editor. Now take a deep breath, and type in the following keystrokes to duplicate the macro command listing in FIGURE 1. We'll explain the steps later.

1. Position the cursor under the {Move} command and press <Ctrl>-<End>. This deletes the previous macro commands, leaving only {Block}{Pause} on the screen. Press <Enter> to move to the next line. Note that hard returns only make the macro easier to read; they have no effect on what it does.

2. Press <Ctrl>-<Page Up> CHAR<Enter> to bring in the {CHAR} command from the pop-up list, type 1~, and press <Enter>.

3. Press <Ctrl>-] 1<Ctrl>-\ <Space><Ctrl>-V<Ctrl>-VM<Ctrl>-Q, type ove;, press <Space>, and then press <Enter>.

4. Press <Ctrl>-] 2<Ctrl>-\ <Space><Ctrl>-V<Ctrl>-VC<Ctrl>-Q, type opy:, press <Space>~, and press <Enter>.

5. Press <Ctrl>-<Page Up>D

```
 1. {Block}{PAUSE}
 2. {CHAR}1~
 3. {^]}1{^\} {^V}M{^Q}ove;
 4. {^]}2{^\} {^V}C{^Q}opy:~
 5. {DISPLAY OFF}{Move}b
 6. {CASE CALL}{VAR 1}~
 7. 1~move~m~move~M~move~
 8. 2~copy~c~copy~C~copy~~
 9. {Cancel}{DISPLAY ON}{PROMPT}
10. Shift+F10 and Enter to retrieve block.~
11. {QUIT}
12. {LABEL}move~m{RETURN}
13. {LABEL}copy~c{RETURN}
```

FIGURE 1: The macro editor displays commands in braces. Programming language commands are in uppercase ({DISPLAY OFF}), and regular editing commands have initial caps ({Block}). (Line numbers are for reference only; they don't appear in the macro file.)

<Enter> <Ctrl>-F4>b, and **<Enter>**.

6. Press **<Ctrl>-<Page Up> CAS<Cursor Down> <Enter> <Ctrl>-V <Alt>-1**~ to enter the {CASE CALL} command, and press **<Enter>**.

7. Type **1~move~m~move~ M~move~**. Press **<Enter>**.

8. Type **2~copy~c~copy~ C~copy~~**. This line must end with *two* tildes or the macro won't work. Press **<Enter>**.

9. Press **<Ctrl>-V<F1> <Ctrl>- <Page Up>D<Cursor Down> <Enter> <Ctrl>-<Page Up>PR <Enter> <Enter>**.

10. To remind yourself how to retrieve the block, type the message **Shift+F10 and Enter to retrieve block.**~, and press **<Enter>**.

11. Press **<Ctrl>-<Page Up>Q <Enter>** to insert the {Quit} command. Press **<Enter>**.

12. Press **<Ctrl>-<Page Up>L <Enter>**. Type **move~m** and press **<Ctrl>-<Page Up>RET<Enter> <Enter>**.

13. Press **<Ctrl>-<Page Up>L <Enter>**. Type **copy~c**, and finally, press **<Ctrl>-<Page Up>RET <Enter> <Enter>**.

Now compare what you've entered with **FIGURE 1**. Make any necessary corrections, then press **<F7>** twice to save the macro.

To use this macro, press <Alt>-M and highlight the block. Press <Enter>, and *WordPerfect* displays a two-choice menu. After you make a selection, the macro reminds you to press <Shift>-<F10> <Enter> to paste the block.

What Makes This Macro Tick

So what's going on in the macro, and what can you learn from it? Let's take a look at each of the macro commands we've used.

There's nothing new in the first line: The macro turns the block command on, and {PAUSE} suspends the action until you highlight the block and press <Enter>.

Lines 2, 3, and 4 create a *WordPerfect*-style prompt line that appears as '1 Move; 2 Copy:'. This is done with the {CHAR} command, whose syntax is {CHAR}*variable~prompt~*. Basically, {CHAR} displays a prompt, waits for you to press a key, assigns that character to a variable, then continues running the macro.

Line 2 is the "{CHAR}*variable number~*" part of the command. Macros use up to ten variables, {VAR 0} to {VAR 9}, to store keystrokes. The number 1 tells the macro to assign the character you type in response to the {CHAR} prompt to {VAR 1}.

Lines 3 and 4 make up the "*prompt*" portion of the {CHAR} command, which generates the on-screen menu '1 Move; 2 Copy:'. *WordPerfect* displays menu choice numbers in boldface; {^]} and {^\} toggle boldface, and {^V} and {^Q} turn the menu-letter display attribute on and off. How menu letters appear on screen varies according to your graphics board and default settings, but using {^V} and {^Q} ensures that your macros' menus match *WordPerfect*'s. The tilde at the end of line 4 marks the end of the {CHAR} command.

{DISPLAY OFF} in line 5 speeds up macro execution by not updating the screen. The block function is on at this point in the macro, so {Move}b activates *WordPerfect*'s Move menu and selects b for block. (Since the display is turned off, you don't actually see the menu.)

Lines 6, 7, and 8 represent the {CASE CALL} command, which teams up with the {CHAR} command to search for and run the subroutines "move" and "copy" on lines 12 and 13 in this macro. The syntax for the {CASE CALL} command is: {CASE CALL}*value*~case1~ label1~case2~label2~...~~

{CASE CALL} reads the variable value recorded by the {CHAR} command and checks it against a case statement (case1, case2, and so on). If it finds a match, {CASE CALL} reads the corresponding subroutine label (label1, label2, and so on), jumps to the subroutine, and runs it.

Only Express Publisher™ Creates Newsletters This Good for Under $150!

oducing Express Publisher,™ designed so you
quickly and easily produce newsletters, flyers,
d more, without the limitations of First Publisher®
d other low-cost desktop publishers.*

nly Express Publisher supports 300-dpi graphics.
hers don't.

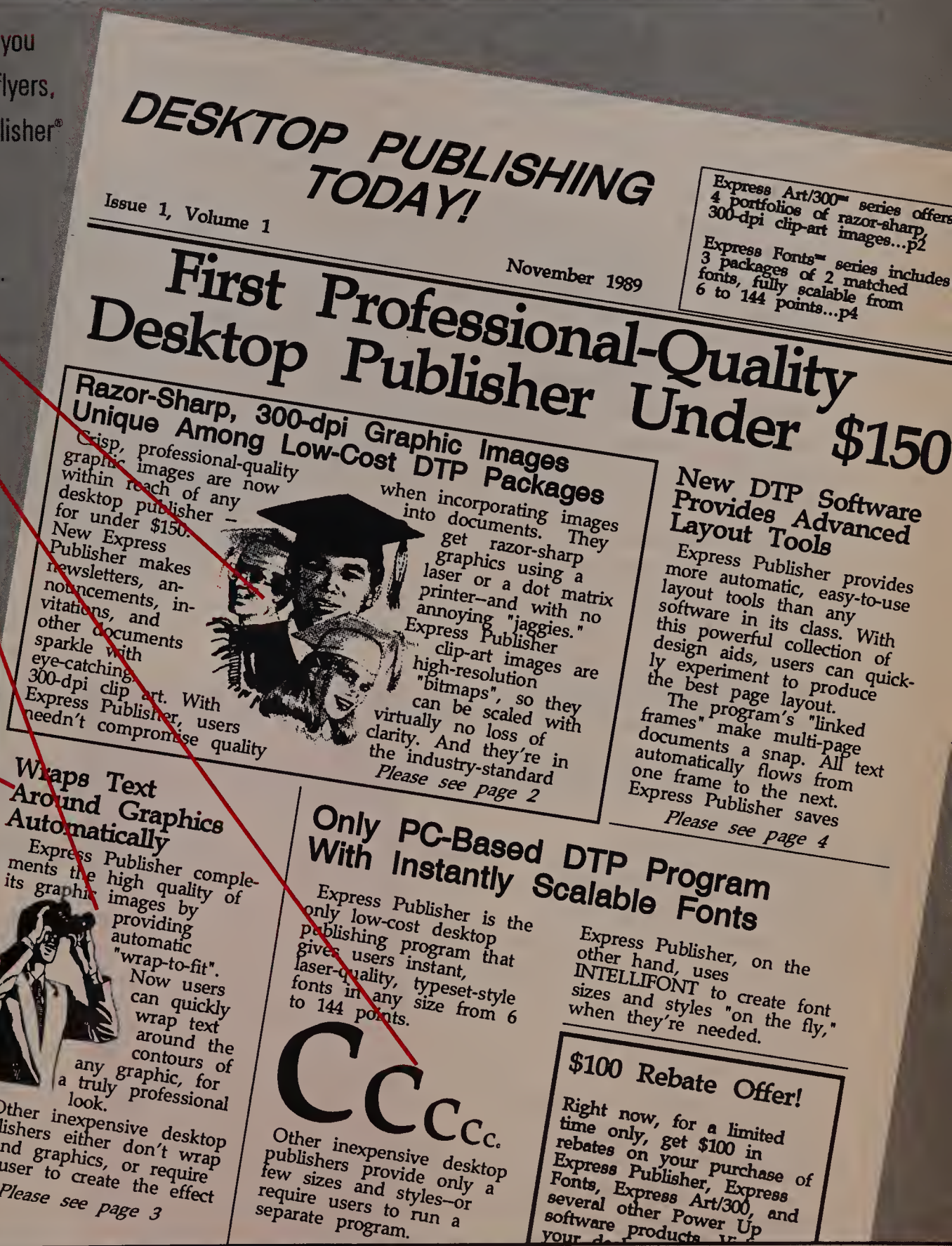
nly Express Publisher offers fully-scalable fonts
om 6 to 144 points. Others don't.

nly Express Publisher wraps text around graphics
tomatically. Others don't.

nly Express Publisher includes auto-
phenation, kerning, and tracking for precise
yout control. Others don't.

is newsletter created entirely with Express
blisher desktop publishing software. Express
blisher series also includes Express Starter Kit,™
press Fonts,™ and Express Art/300.™

iced under $150.



DESKTOP PUBLISHING TODAY!

Issue 1, Volume 1 — November 1989

Express Art/300™ series offers 4 portfolios of razor-sharp, 300-dpi clip-art images...p2

Express Fonts™ series includes 3 packages of 2 matched fonts, fully scalable from 6 to 144 points...p4

First Professional-Quality Desktop Publisher Under $150

Razor-Sharp, 300-dpi Graphic Images Unique Among Low-Cost DTP Packages

Crisp, professional-quality graphic images are now within reach of any desktop publisher – for under $150. New Express Publisher makes newsletters, announcements, invitations, and other documents sparkle with eye-catching 300-dpi clip art. With Express Publisher, users needn't compromise quality when incorporating images into documents. They get razor-sharp graphics using a laser or a dot matrix printer—and with no annoying "jaggies." Express Publisher clip-art images are high-resolution "bitmaps", so they can be scaled with virtually no loss of clarity. And they're in the industry-standard

Please see page 2

New DTP Software Provides Advanced Layout Tools

Express Publisher provides more automatic, easy-to-use layout tools than any software in its class. With this powerful collection of design aids, users can quickly experiment to produce the best page layout.

The program's "linked frames" make multi-page documents a snap. All text automatically flows from one frame to the next. Express Publisher saves

Please see page 4

Wraps Text Around Graphics Automatically

Express Publisher complements the high quality of its graphic images by providing automatic "wrap-to-fit". Now users can quickly wrap text around the contours of any graphic, for a truly professional look.

Other inexpensive desktop publishers either don't wrap around graphics, or require the user to create the effect

Please see page 3

Only PC-Based DTP Program With Instantly Scalable Fonts

Express Publisher is the only low-cost desktop publishing program that gives users instant, laser-quality, typeset-style fonts in any size from 6 to 144 points.

CCCCc.

Other inexpensive desktop publishers provide only a few sizes and styles—or require users to run a separate program.

Express Publisher, on the other hand, uses INTELLIFONT to create font sizes and styles "on the fly," when they're needed.

$100 Rebate Offer!

Right now, for a limited time only, get $100 in rebates on your purchase of Express Publisher, Express Fonts, Express Art/300, and several other Power Up software products. Ur

Express Publisher

SPECIAL UPGRADE OFFER

Step up to the best for only $49.95!

For a limited time only, you can upgrade from First Publisher® or any other low-cost desktop publisher. Call toll-free 1-800-851-2917 now for details (California 1-800-223-1479), 7 a.m. - 5 p.m. Pacific Time.

Ask for Ext. M120.

Circle 238 on reader service card

Power Up!® SOFTWARE CORPORATION

2929 Campus Drive, San Mateo, CA 94403-7600

press Publisher, Express Starter Kit, Express Fonts, and Express Art/300 are trademarks of Power Up Software Corporation. Power Up! is a registered trademark of Power Up Software Corporation. First Publisher is a registered trademark of Software Publishing Corporation. Fonts created by AGFA Compugraphic. Graphic Images © 1976, 1980-1989 SCW Art Services, Inc., all rights reserved. Express Publisher requires IBM® or 100% compatible PC; 640K RAM; DOS 3.0 or higher; IBM CGA, EGA, MCGA, VGA, or Hercules graphics card and monitor; Microsoft or compatible mouse; HP LaserJet, DeskJet, or most Epson, IBM, and compatible dot matrix printers; hard disk with at least 2MB free space.

In line 6, {CASE CALL} reads the character that {CHAR} has stored in {VAR 1} and searches for a match among several case statements.

Lines 7 and 8 define {CASE CALL}'s case statements and identify the corresponding subroutine labels. To duplicate *WordPerfect 5.0*'s mnemonic menus, you need three case statements for "move" and three for "copy": a number, a lowercase letter, and an uppercase letter.

For "move," the possible choices are 1, m, and M (line 7); for "copy" the choices are 2, c, and C (line 8). Each case statement has a label that corresponds to a subroutine—in this case, either line 12 or 13. The double tildes (~~) at the end of line 8 mark the end of the {CASE CALL} command.

The {LABEL} command (whose syntax is {LABEL} *subroutine name*~) specifies two simple subroutines that start *WordPerfect*'s move and copy functions, respectively. {RETURN} marks the end of a subroutine.

After the macro has run the subroutine, it continues with the command that follows the {CASE} statement, beginning at line 9 in this macro. {DISPLAY ON} lets you see on-screen information. The {PROMPT} command (whose syntax is {PROMPT}*message*~) displays a message at the *WordPerfect* status line. Line 10 contains the text for the {PROMPT} message, the block-retrieve reminder.

The {QUIT} command on line 11 ends the macro and also separates the main body of the macro from the subroutines.

To Learn More About Macros

For a discussion of *WordPerfect 5.0*'s macro programming language and the built-in macro editor, look at the Advanced Macros section of the program manual's appendix. If that section of your manual begins with a discussion of the macro command keys rather than the macro editor, call WordPerfect at 800/321-4566 and ask for the free Advanced Macros supplement.

As you become more macro-literate, you may start to feel hampered by *WordPerfect 5.0*'s built-in editor. It lets you view only 13 lines of a macro at a time and lacks block, cut-and-paste, search-and-replace, and printing functions. Fortunately, the recently upgraded *WordPerfect Library Macro Editor* provides all these missing functions, plus full-screen editing and its own internal macros. Anyone with more than a casual interest in *WordPerfect* macros should get the $15 *Macro Editor 5.0*.

POWER TIP NO. 73

An Easy Way to Find DOS Subdirectories

When you're working in a directory packed with data, it's difficult to see the subdirectories among the files. Instead of typing DIR, which lists a mélange of subdirectories and files, try the DIR * command, which lists only subdirectories and any files without a file name extension. It'll save you time and frustration during a sudirectory hunt.

Gary Ritchie
Calgary, Alberta, Canada

TIPS & TECHNIQUES

Data Management

Flawless Form Letters With dBASE IV

You don't need a word processor to turn out polished mass mailings. Here are step-by-step instructions for mastering dBASE IV's powerful mail merge function.

What you need: dBASE IV, a printer

Ever run into this problem? Your clients' addresses are in a data base, but you must use a word processor to produce mail merge letters. The result is a tedious data extraction and the risk of errors cropping up when you're updating duplicate mailing lists.

Users of Ashton-Tate's *dBASE IV* have an alternative. With its built-in printer drivers, font support, and visual display, *dBASE IV*'s band-oriented report writer offers a mail merge generator that rivals those of word processors.

However, version 1.0's mail merge has a few rough edges.

Cure Hayes fever.

2400etc/*e*

V.42 compliant

Get fast relief from high prices with ATI's high-performance, error-free modem for a fraction of the price.

See us at Booth H8224
COMDEX/Fall '89
November 13–17, 1989
Las Vegas Hilton Hotel
Las Vegas, Nevada

Allergic to high modem prices? Here's news that will clear your head, not your budget.

ATI® Technologies' 2400etc/*e*® external modem* meets the competition feature for feature...and then some! Remarkably, it costs just a fraction of the price.

Relief is fast. With MNP® level 5 data compression, the 2400etc/*e*'s throughput speed exceeds 4800bps, thereby lowering transmission costs.

The 2400etc/*e* complies with the CCITT V.42 error-control standard, including LAP-M and MNP, for 100% error-free data transfer. As well as offering synchronous operation, it's fully compatible with the standard and extended Hayes® 'AT' command sets. Plus, ATI's easy-set front panel controls provide convenient access to frequently used commands.

Don't suffer from high prices. The ATI 2400etc/*e* external modem cures Hayes fever for only **$299.**** And that's nothing to sneeze at.

You'll be relieved to know that ATI also offers a high-performance internal modem, the 2400etc/*i*, at an equally non-allergic price. Only **$239.****

For more information, contact your supplier or

ATI Technologies Inc.
3761 Victoria Park Avenue
Scarborough, Ontario
Canada M1W 3S2
Tel: (416) 756-0718
Fax: (416) 756-0720

ATI® TECHNOLOGIES INC.
Technology you can Trust.

*Conforms to CCITT V.22, V.22bis, Bell 103 and Bell 212A standards. ®ATI and 2400etc are registered trademarks of ATI Technologies Inc; Hayes is a registered trademark of Hayes Microcomputer Products, Inc; MNP is a registered trademark of Micracom, Inc. **Manufacturer's suggested retail price.

Circle 22 on reader service card

FIGURE 1

Building Your dBASE IV Mail Merge File

Here's the structure of the data base used in this mail merge example. You may want to add fields to your data base to enhance it for mail merge. For example, the DEARXXX field could be the first name, a nickname, or the last name preceded by Mr. or Ms. The MAILED field keeps track of who has received a mailer, to prevent duplicate mailings.

Field	Field Name	Type	Width	Dec	Index
1	LASTNAME	Character	20		Y
2	FIRSTNAME	Character	20		N
3	TITLE	Character	5		N
4	DEARXXX	Character	20		N
5	CORP_TITLE	Character	50		N
6	COMPANY	Character	50		Y
7	ADDRESS	Character	30		N
8	ADDRESS2	Character	30		N
9	CITY	Character	30		N
10	STATE	Character	2		Y
11	ZIP	Character	10		Y
12	COUNTRY	Character	15		N
13	MAILED	Logical	1		N
14	MAILDATE	Date	8		N

This article explains how to work around these problems as it takes you step-by-step through a typical mail merge operation. All the tips assume you have given the command SET INSTRUCT OFF, or put INSTRUCT=OFF in the CONFIG.DB file, to turn off prompts.

Prep Work

To install printer drivers and fonts, run the DBSETUP program from the directory where your mail merge data is located. Select the appropriate printers, and enter the control codes for the fonts you want.

Next, run *dBASE IV* from the same directory. First you'll open the data base. **FIGURE 1** shows the data base structure used in this example. The structure assumes a flat file data base, but you can just as easily work with a relational model; just use QBE to select the fields you want, and use the resulting view when you create your report. Here's how you begin:

1. To open the data base, highlight its name in the Data column of the Control Center and press **<Enter>**.
2. Cursor to the Reports column and select *<create>*. The report screen appears.
3. Select *Quick Layouts*, then *Mailmerge layout*.

This will open the detail band of the report form, leaving the other bands closed. Here you'll type in the body of the letter and enter the mail merge fields. Before you begin, you can format the letter by opening the print menu (<Alt>-P) and selecting margins, fonts, and other settings. However, the default settings should do the trick for most users.

▶ Set the Date

Before you start the letter, put some blank lines at the top to accommodate your letterhead by making sure <Insert> is on and pressing <Enter>. Then insert a date field. To print the date in the MM/DD/YY format, you would press <Alt>-F to bring up the Fields menu, choose Add field, select Date from the Predefined column, and press <Ctrl>-<End>. For the more formal format that prints the month name, the day number, and the 4-digit year, add a calculated field as follows:

1. Press **<Alt>-F**, choose *Add field*, and select *<create>* in the Calculated column.
2. Select *Expression*.
3. Type the following:

```
TRIM(CMONTH(DATE())) + " " +
STR(DAY(DATE()),IIF(DAY(DATE())<
10,1,2)) + "," + STR(YEAR(DATE()),4)
```

4. Press **<Enter>**, then **<Ctrl>-<End>**.

▶ Adding Fields

Now add the name and address fields that correspond to your data base fields:

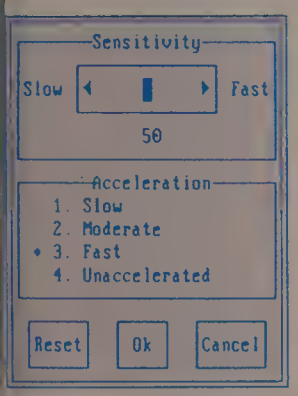
1. Insert a few blank lines, press **<Alt>-F**, and select *Add field*.
2. Select *TITLE* (for Mr., Ms., etc.) and press **<Enter>** and **<Ctrl>-<End>**.
3. Insert a blank space after the TITLE field (indicated by *X*'s on screen).
4. Press **<Alt>-F**, select *Add field*, choose *FIRSTNAME*, and press **<Ctrl>-<End>**.
5. Insert a blank space and repeat the process to add the LASTNAME field.

At this point you could press <Enter> to start a new line, add the CORP_TITLE field, add COMPANY on the next line, and then move on to the address.

This is all the space you need to operate the new Microsoft Mouse.

Here's the first thing you should do with the new Microsoft® Mouse.

Bring up the expanded control panel. Set it for "Fast." And then, with a very slight movement of your hand, watch the cursor scoot all the way across the screen.



You're in complete and total control with the new, expanded control panel.

You'll be hooked.

And don't worry about control. We upped the resolution to an extremely accurate 400 points per inch. In other words, the cursor practically reads your mind.

To help even more with accuracy, the tracking ball is in front. And the patented design fits comfortably in your hand.

What it all means is you get more out of your software. By being able to quickly and efficiently click through even the most sophisticated applications.

In fact, we put OS/2 support in our upgraded driver. Making the Mouse ready for whatever the future of software brings.

To complete the package, you also get a choice of Microsoft Windows/286™ or Microsoft Paintbrush,™ two useful Mouse programs.

So visit your Microsoft dealer for more details and a complete demonstration.

Now, you may not want to let your boss know just how little room you need for a Microsoft Mouse. You could lose your shot at a bigger desk.

Microsoft®

Making it all make sense™

For more information inside the 50 United States, call (800) 541-1261. In Canada, call (416) 673-7638. Outside the U.S. and Canada, call (206) 882-8661. © Copyright 1989 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and Windows/286, Paintbrush and *Making it all make sense* are trademarks of Microsoft Corporation. The Microsoft Mouse design is patented.

However, if some clients lack a title or company, *dBASE IV* will print two blank lines between the name and the address, and the personal touch—or illusion thereof—will quickly be shattered. Here's the solution:

1. Instead of placing the CORP_TITLE field on a new line, move the cursor to the end of the LASTNAME field. Don't leave a blank space.

2. Press **<Alt>-F** and select *Add field.*

3. Select <*create*> in the Calculated column.

4. Select *Name field*, and type in a name that's slightly different from the original field name (CORP_TITLE), then press **<Enter>**.

5. Choose *Expression*, and type the following:

IIF(LEN(TRIM(CORP_TITLE))>0, CHR(13)+CHR(10)+TRIM(CORP_TITLE)," ")

6. Press **<Enter>** and **<Ctrl>-<End>**.

This blank-line fix first checks the CORP_TITLE field to see if it's filled. If it is, the Immediate IF (IIF) evaluates the first expression as true and places the TRIM(CORP_TITLE) expression on a new line [CHR(13) is a carriage return, and CHR(10) is a linefeed]. If the CORP_TITLE field is empty, a null string (" ") is output, so no blank lines are printed. On screen, the result should be another row of *X*'s directly following the LASTNAME field.

Next, at the end of the same line, without adding a blank space, go through the same process for the COMPANY field, but replace the two references to CORP_TITLE with COMPANY in the expression.

Finally, go ahead and enter the address fields in the usual manner, selecting the fields from the Add field menu and placing each field on a new line. Keep CITY, STATE, and ZIP separated with the appropriate commas and spaces on screen. For the salutation, press **<Enter>** twice, type **Dear**, skip a space, and insert the DEARXXX field followed by a colon. Then press **<Enter>** twice, and type the rest of the letter. *dBASE IV* provides word wrap and lets you change fonts on the fly from the Words/Style menu. (You can import an ASCII file if you want, but you'll have to strip the carriage returns by hand.)

You may encounter a sporadic bug in version 1.0: After you press <Enter>, you may lose the right margin from the ruler line. In this case, you'll have to reset the margin before starting the next paragraph.

When you're done, press **<Ctrl>-<End>**, and enter a report name at the prompt. The code generated by your mail merge report will scroll by on screen.

To print the report from the Control Center, highlight the report name and press **<Enter>**. A print menu appears, providing options to preview the report on screen and change settings before printing. To modify the mail merge report, highlight the report name in the Control Center and press <Shift>-<F2>.

With solid, built-in mail merge, you can forget about lengthy conversions and keeping duplicate lists. Learning *dBASE IV*'s mail merge can save a lot of time. —*Tony Lima*

Desktop Publishing

Eight Tips for Taming Ventura

A pair of Ventura Publisher veterans share their secrets for avoiding crashes, solving baffling formatting glitches, moving pagefuls of text, and more.

What you need: Ventura Publisher 1.1, 2.0, or Professional Extension

Xerox's *Ventura Publisher* may be the best choice for desktop publishing on the PC, but it still has some rough edges. Here are eight ways to fix some of the things that inexplicably go wrong—and avoid getting into jams in the first place. The eight tips range from tricks for steering clear of program crashes to solutions for common formatting errors.

Escape That Crash

Ventura Publisher is no stranger to crashes. Suddenly, your keyboard freezes, or you find yourself staring at a lonely DOS prompt. Crashes frequently occur when you load a document that's bigger than available memory. *Ventura* then swaps out the excess portion to a spill file, sometimes freezing the screen. The simplest solution is to limit chapters to about 20 pages. You can also free up memory by re-

LIMITED-TIME OFFER! GET THE TOTAL PORTABLE SOLUTION!

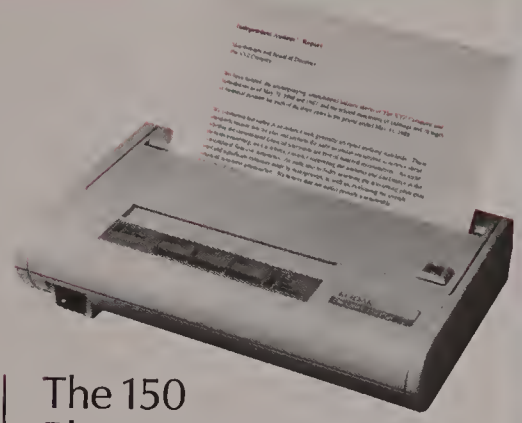
Get instant output from your Altima One-20 mb computer with a KODAK DICONIX 150 Plus Printer and parallel cable–only $3178.*

TO ORDER, JUST MAIL THIS CARD OR CALL TOLL-FREE 1-800-356-9990.

☐ Yes! I would like to order the Altima One *and* Diconix 150 Plus printer with parallel cable.
☐ I'd like more information. Please have a sales representative call me.

Name (Please Print)_____
Title_____
Company_____
Address_____
City_____ State_____ Zip_____
Telephone (_____)_____

Bill to: ☐ VISA ☐ MasterCard ☐ American Express
Acct. #_____ Expires_____
Signature_____



The 150 Plus Printer is:

- The smallest, lightest, quietest printer in the world
- Compact—3.1 lbs.
- Letter quality printing
- Fast—180 characters/sec.

HURRY! Offer expires 12/31/89.

altima

*Plus tax and shipping.
Kodak and Diconix are trademarks.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 340 CONCORD, CA 94520

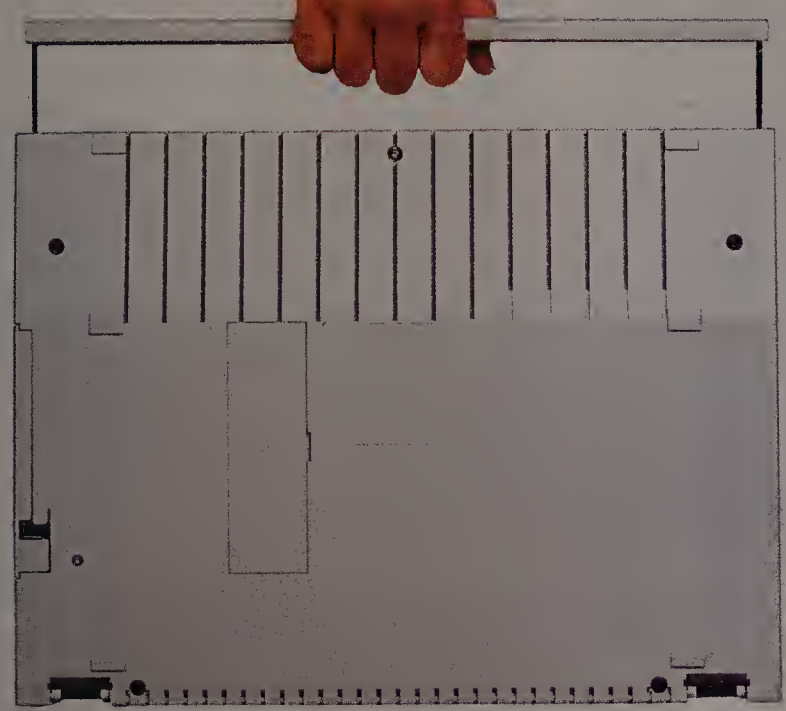
Postage will be paid by addressee

Altima Systems, Inc.
1390 Willow Pass Road, Suite 1050
Concord, CA 94520-9771

Save now!

Buy direct for only $2,799.00*

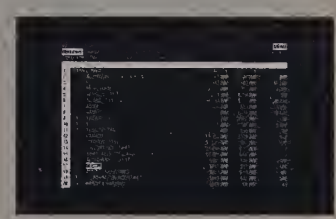
40 megabyte now available!



First there were desktop computers. Then came the laptops. Each offered something that the other did not.

But now there's something that combines the best of both worlds. Because now there's a portable that's easy enough to take with you; yet powerful enough to double as your office computer.

You may say that sounds like a split personality. We say it sounds like the new Altima One.



Altima One can run MS-DOS and OS/2 with ease. Plus it features an impressive 80286 microprocessor that speeds to a full 16 MHz, without ever gasping for breath.

Split personality.

What's more, Altima One *comes with* items that other manufacturers call options. Like a built-in 2400 baud modem. Or an optomechanical mouse with a compartment for storage. Or a PC compatible expansion slot.

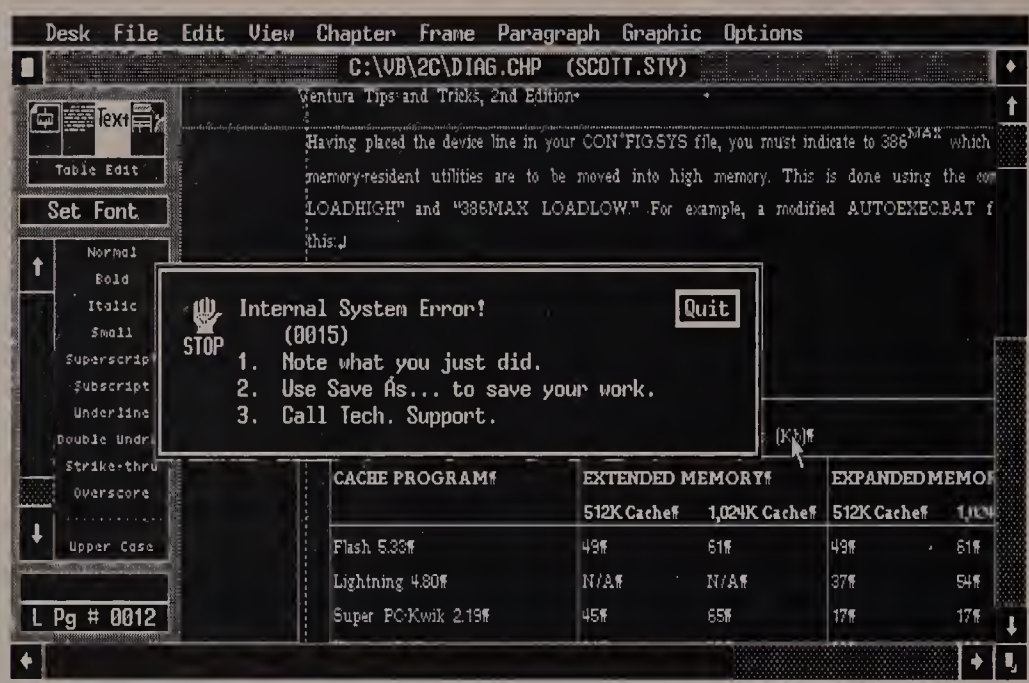
Altima even remembered to give you more memory. Because with Altima One, you can expand from one megabyte to five.

Add to this the paper-white LCD backlit display; a full function 101-key detachable keyboard with numeric keypad; a 3½", 1.44 megabyte internal floppy disk drive; plus a 20*or 40 megabyte hard drive, and you'll realize why the Altima desktop/laptop is one heck of a computer. Or is it two?

altima

Altima Systems, Inc.
1390 Willow Pass Rd., Suite 1050
Concord, CA 94520 800/356-9990

Circle 4 on reader service card



SCREEN 1: Don't take no for an answer. Usually, a Ventura error message like this leaves you with no choice but to reboot. But if you repeatedly click on the Quit button, you may eventually be freed, with your latest changes intact.

moving TSRs or reducing buffers specified in CONFIG.SYS.

Professional Extension largely eliminates this problem by taking full advantage of EMS memory. An EMS board can also help with the base version of *Ventura 2.0*, which can use up to 108K of EMS.

If a chapter crashes frequently, delete the VP.INF file (or VPPROF.INF in the *Professional Extension*) from your *Ventura* directory. This file, which stores display defaults such as whether to show ruler lines, is corrupted when *Ventura* crashes, and continuing to use it can lead to more crashes. The display will revert to *Ventura*'s defaults after you delete VP-.INF, but it's easy enough to reset them. The next time you save the chapter, *Ventura* will create a new VP.INF.

Thawing Frozen Error Messages

Sometimes when *Ventura* crashes, it displays a dialog box, as shown in **SCREEN 1**. Clicking the Quit button usually has no effect, but if you click it 20 or 30 times, you might mysteriously be granted clemency—the dialog box will disappear, and you'll be free to resume working.

Vanishing Screen Fonts

One of *Ventura 2.0*'s most enticing features is the ability to display large screen fonts—72 points or more—at their actual size. Occasionally, though, the program won't display them, usually due to a lack of memory in the screen buffer. If this happens, delete the VGAFSTR.INF, EGAFSTR.INF, CGAFSTR-.INF, or SD_HERC.EGA file (depending on your display) from your *Ventura* directory.

If that doesn't help, increase the size of *Ventura*'s screen font buffer: Load the VP.BAT file (VPPROF.BAT in the *Professional Edition*) into a word processor, and add /F = *x* to the end of the line beginning DRVRMRGR. The *x* specifies the buffer size in kilobytes and can be any number between 68 (the default) and 128. The trade-off to increasing this buffer: You reduce the RAM available for loading large documents.

Waking Up a Sluggish Cursor

If the text-editing cursor refuses to respond when you press the arrow keys, you probably pressed <Shift>-<Ctrl> by mistake, putting *Ventura* into its "no mouse" mode. In this mode, the arrow keys control the mouse cursor, so the text editing cursor is disabled. To return to mouse mode, press <Shift>-<Ctrl> again. Note: Only the <Shift> and <Ctrl> keys on the right side of the keyboard toggle this mode.

Disappearing Formats

Sometimes after you load *Ventura*, you'll find that text formatted in italic or bold has mysteriously lost its formatting. In this case, an index or anchor mark is usually hidden in the text, causing everything after the mark to lose its formatting. Removing the markers alone won't restore the formatting; you'll also have to retag the text. To avoid this problem, don't place such marks within formatted text.

Eliminating an Isolated Paragraph Mark

After you load text into *Ventura*, you may notice an unwanted line with nothing on it but the paragraph sign. This occurs when a space follows the period in the last sentence of a paragraph. To eliminate the unwanted line, select text-editing mode, place the

CORELDRAW!

$10,000 CONTEST

ENTER NOW!

Corel DRAW is the World's Finest PC Illustration Program and opens up exciting new possibilities that bridge the gap between art and technology. To stimulate this creative potential we have launched a major international Design Contest with a Grand Prize of $10,000 for "Best of Show".

As well, there will be prizes and awards for winners in both Fine Art and Commercial categories. Enter now by submitting your designs and illustrations before December 1, 1989.

All design entries should be submitted on a floppy disk and accompanied by a hard copy.

Open to all registered Corel DRAW Software users.

See us at
COMDEX

Circle 16 on reader service card

COREL

Tel:(613)728-8200 / Fax:(613)728-9790
COREL Systems Corp. 1600 Carling Ave. Ottawa, Ontario K1Z 8R7

IBM

cursor in front of the paragraph mark, and press <Backspace>.

Stubborn Text Attributes
Sometimes when you apply text attribute tags in the Text Mode Selection box, the attributes won't take effect. In this case, try highlighting the text in question, choosing Normal from the list, and then selecting your attribute again.

If that doesn't work, hidden attribute settings are probably preempting your new selections and need to be deleted. Say you've highlighted a passage and selected Bold, for example, but text remains italicized. Place the cursor in front of the text (you'll know you're in the right location when 'Attr. Setting' appears in the Current Selection box in the lower left corner of the screen), and press <Delete> to delete the attribute marker.The text is returned to normal, so you'll have to retag it with bold.

Moving Large Blocks of Text
What if you want to move a block of text that spans more than one page? Ventura won't let you highlight more than one page of text at a time. The solution is to temporarily change the Body Text tag to a tiny point size, such as 2 or 3 points, so that you can highlight the entire passage and move it. You can then reset the tag to its normal font size. —*Ted Nace*

This article is adapted from Ventura Tips and Tricks, *2d edition, by Ted Nace with Daniel Will-Harris (Peachpit Press, 1989, Berkeley, California).*

Communications

Money-Saving Tips for Dow Jones News/ Retrieval

DJN/R is an essential source of investor information, but watch out for those steep charges! Our on-line expert offers tested advice for getting top value from your Dow Jones dollars.

What you need: a Dow Jones News/Retrieval subscription

If you're an active investor, Dow Jones News/Retrieval (DJN/R), the on-line information service from the publisher of the *Wall Street Journal*, is virtually indispensable.

DJN/R's collection of 35 data bases provides current and historical stock quotations; full text of *The Wall Street Journal*, *Business Week*, and *Barron's*; and selected stories from the *Washington Post*, *Forbes*, and more than 150 other publications. You also get access to company profiles, earnings estimates, insider trading filings, balance sheets, and much more from such companies as Dun & Bradstreet.

Unfortunately, DJN/R has never been particularly easy to use, and experimenting on line with the meter running can result in high monthly bills: DJN/R charges by the minute; some data bases are more expensive than others; and special services involve costly surcharges. For instance, should you accidentally order a full company report from Dun's Financial Records, you'll be billed an additional $89.

Fortunately, there are a number of expert techniques—such as getting stock quotes directly from the system prompt and using QUICK reports, TRACK portfolios, and the new DOW-QUEST search function—that can save you time (and therefore money) on line. (We'll assume you're familiar with standard stock symbols; if not, you can access the Symbols data base by typing //SYMBOLS and pressing <Enter>.)

Prompt Quotes
If you want historical stock quotes fast, you don't need to plough through the DJN/R HQ data base; you can save time and keystrokes by getting quotes directly from DJN/R's main system prompt (either a blank line, or 'ENTER REQUEST'). Just key in a semicolon followed by a stock symbol and a "P" code specifying a certain time period. For instance, typing ;IBM P1 will give you quotes for IBM for the last 12 trading days. (The P codes work in increments of 12 days; P2 gets you quotes from days 13 through 24, and so on.)

Quick and Comprehensive
The fastest way to get a broad selection of information on a given company is to use the QUICK feature. For example, entering //QUICK IBM from the system prompt will produce a menu of items pertaining to IBM drawn from eight DJN/R data bases,

The end of the error message.

:h one of these PC screens is ing something different. But y're all telling you the same ıg.

Ɪou and your data are in a ole lot of trouble.

Perhaps someone hit the ɔng key and deleted your a by accident.

Perhaps it's simply lost some- ere on your disk.

Or perhaps the disk is cor- ɔted and everything is lost.

he Standard Edition ves you UnErase, File and a range of features, ons and enhancements— at an even more reasonable price.

Perhaps you should get the new Norton Utilities.®

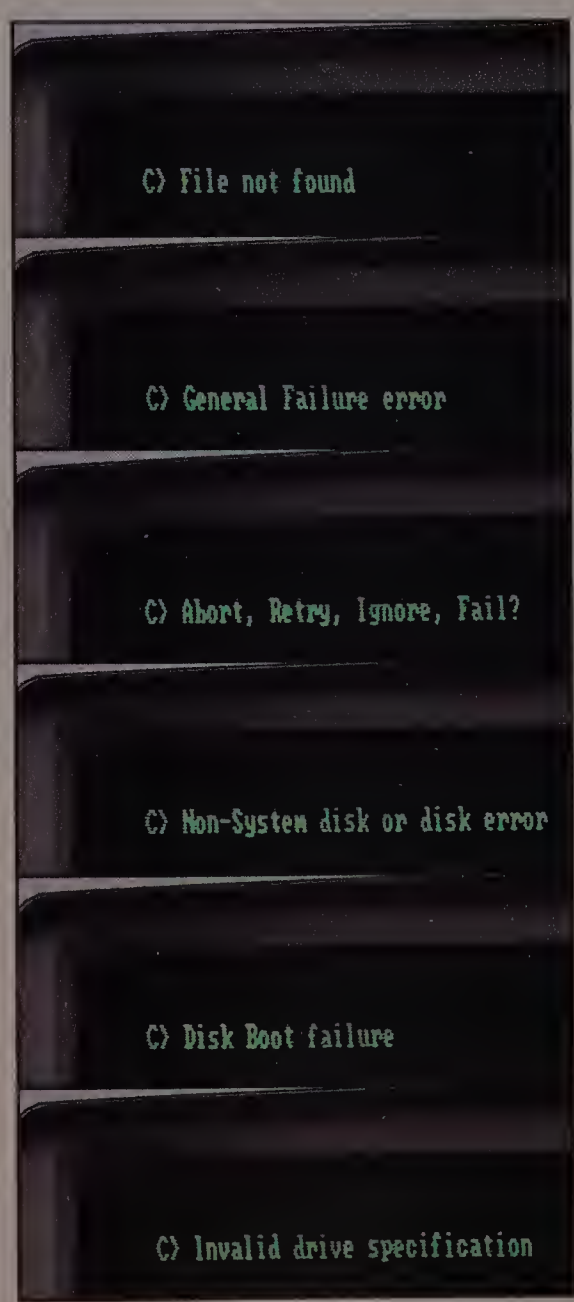
Because only the Norton Utilities can take the terror out of all these error messages.

If someone has accidentally eted your data, fear not. r legendary *UnErase*® can urrect it with a few simple ystrokes.

If you've misplaced it—which, ıen you're dealing with a hard k, is terrifyingly easy to do— *File Find* will come to the cue.

And what if worse comes to ırst and your whole disk goes wn?

Cheer up.



The extraordinary new *Norton Disk Doctor*™ will determine the exact nature of the problem, report it and, in most cases, fix it for you.

All by itself.

In fact, if the Doctor can't cure your corrupted floppy or hard disk, then Buster, you've got one corrupt disk.

In which case, you'll need to refer to *The Norton Trouble-shooter,* a 158-page guide to finding and fixing most anything that could go wrong.

Don't worry, you don't have to go to the library or the bookstore to refer to it, because it's included in the Advanced Edition.

Along with 24 more organizational and disk management utilities we don't have space to mention.

PC Magazine calls the Norton Utilities "indispensable."

You'll want to call your local software dealer. Or call us at 1-800-365-1010.

Then you'll have nothing to fear but fear itself.

Peter Norton
COMPUTING

Designed for the IBM® PS/2® and PC families and 100% compatibles. © 1989 Peter Norton Computing, Inc. All rights reserved.

Circle 91 on reader service card

including current quotes, news stories from multiple sources, a financial overview, and more.

If you accept all the menu items, a complete QUICK report costs $39. It will still save you money if you need a complete company background, though, since without it you would have to delve into eight separate data bases. If you choose only selected items from the QUICK menu, of course, the cost drops.

Saving Time With TRACK

If, like most investors, you follow more than one stock, you can save time by using the TRACK feature to get up-to-the-second news and quotes on selected portfolios. TRACK is a menu-driven function that draws its information from two data bases: Dow Jones Enhanced Current Quotes and Dow Jones News (which includes stories from the *Wall Street Journal*, *Barron's*, and Dow Jones News Service).

With TRACK you can create up to five "portfolios." Each one lets you specify up to 25 stock or security symbols for companies you want to follow, plus DJN/R category codes to specify the kinds of news stories you want to read on those companies. (DJN/R will charge you $8 a month to use TRACK, regardless of the number of portfolios you create.)

A portfolio you name Compute, for example, might contain the stock symbols IBM, AAPL, CPQ, plus category codes I/EDP (for computer industry news) and I/OFF (for office-equipment industry news). Then, when you type in //TRACK COMPUTE from the system prompt, DJN/R will retrieve quotes and relevant news stories—as recent as 90 seconds old—for each company in your profile and display them on screen. You can limit retrieval to quotes and news added since you last ran the profile by using the NO switch (//TRACK COMPUTE NO).

The DOWQUEST Revolution

The most precious jewel in the DJN/R crown is its collection of full-text data bases, containing more than 150,000 articles. There are three access codes you can use to conduct searches: //TEXT, //TEXTM, and //DOWQUEST.

DOWQUEST, introduced only a few months ago, is a giant step forward in text-search software. Not only does it let you conduct a keyword search with simple, English-like queries, but its advanced algorithm is clever enough to assign a higher priority to text in which keywords are grouped together. For example, if *expansion board* is your area of interest, text in which that phrase appears is likely to yield better results than an article in which the words *expansion* and *board* occur separately.

1. To begin using DOWQUEST, type **//DOWQUEST <Enter>** from the system prompt. You will be asked to enter words that describe the subject you are interested in. Simply type in a series of keywords, separated by spaces. For instance, if you were curious about IBM's latest expansion boards, you might enter IBM expansion board new.

2. DOWQUEST will present you with a list of 16 numbered article headlines, ranked according to how closely they match your query. To view an article, simply enter its number and proceed to step 3. However, if you key in BEST *n*, where *n* is the number of an article, DOWQUEST will take you directly to the page in that article that best matches your search query.

3. In either case, the displayed paragraphs on the page will be numbered, and you will be invited to pick the "best" paragraph or paragraphs to further refine the search. This time when you type SEARCH *n* <Enter>, DOWQUEST uses every word in paragraph *n* to search its files again, looking for the best match.

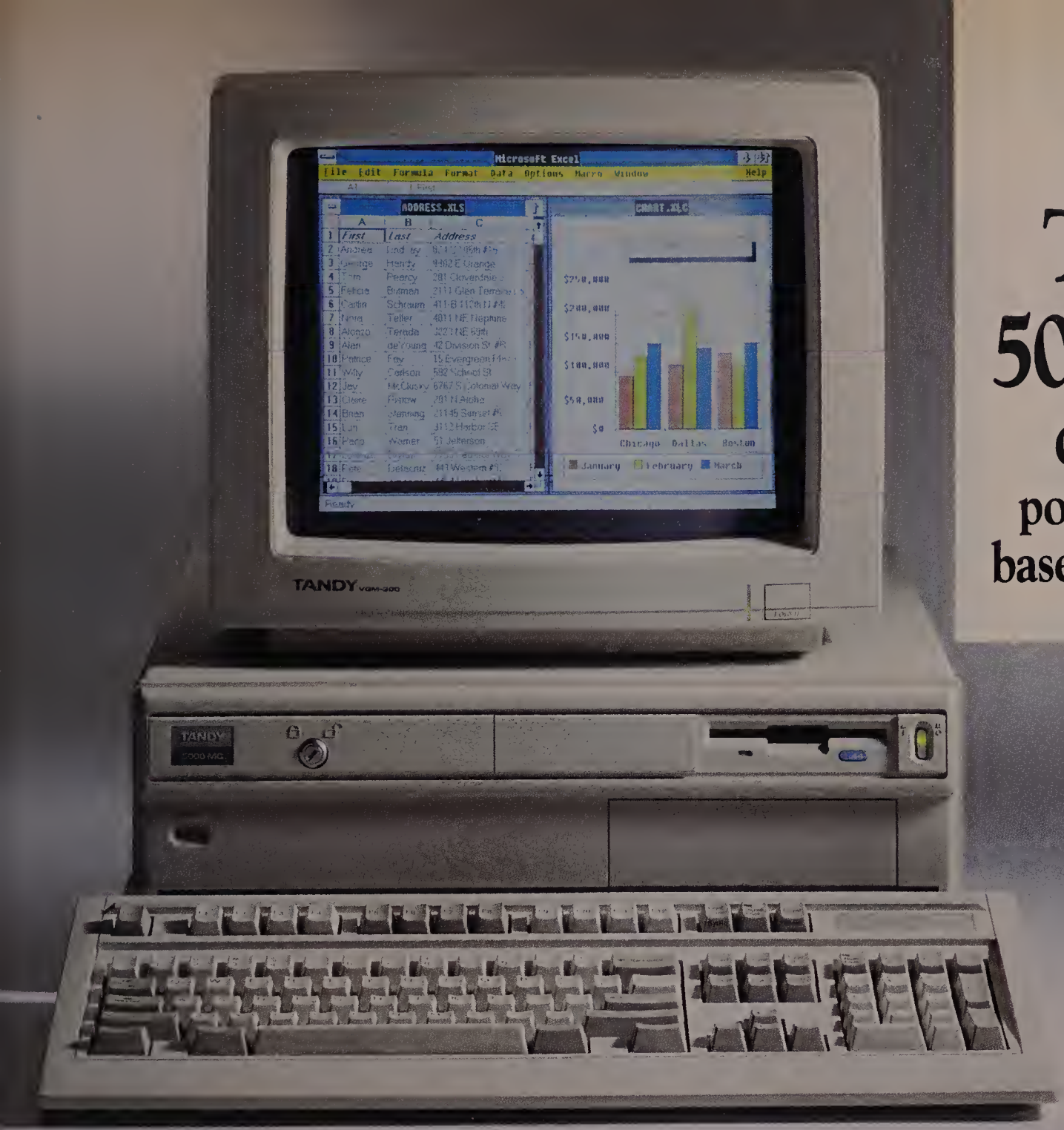
4. When you have located the most useful articles, you can display the full text by using the **PRINT** command and capture the data to a disk file with your communications package.

DOWQUEST can cost more than twice as much as TEXT or TEXTM, but its ease of use and advanced search features are worth it. For active investors, Dow Jones News/Retrieval is a necessity, not a luxury—which means it's important to keep your bills from reaching luxury levels. That means playing it smart, not cheap. —*Alfred Glossbrenner*

Robert Lauriston is a San Francisco–based computer consultant specializing in WordPerfect *and local area networks. Tony Lima, a* dBASE *author, consultant, and developer, wrote* Inside dBASE IV *(Addison-Wesley, Reading, Massachusetts, 1989). Ted Nace is a contributing editor for* PC World, *and Albert Glossbrenner's many books cover communications and personal computing.*

The Tandy® 5000 MC

Our most powerful 386™ based computer.



The remarkable Tandy 5000 MC Professional System is pure performance, from the Intel® 80386 processor operating at 20 MHz to the high-speed memory with cache controller that provides RAM-fast access to your data.

With the 5000 MC, you have the high-performance platform needed to take full advantage of industry-standard MS-DOS® applications, powerful new MS® OS/2 programs or multiuser SCO XENIX® software.

Operating at 20 MHz, the 5000 MC cuts through the big jobs like database management, large spreadsheets and sophisticated graphics. And with its IBM® Micro-Channel™ compatible architecture, it's the ideal high-end PC workstation.

The Tandy 5000 MC has power to share. It's system architecture provides high performance in data-transfer rates when the 5000 MC is configured within a 3Com workgroup or a XENIX multiuser environment.

The Tandy 5000 MC is the new alternative in personal computing. From the broadest selection of PCs made in America.

Tandy Computers: Because there is no better value.℠

Radio Shack®
COMPUTER CENTERS
A DIVISION OF TANDY CORPORATION

Intel and 386/TM licensed from Intel Corp. IBM/Reg. TM and Micro Channel/TM IBM Corp.
MS, MS-DOS and XENIX/licensed from Microsoft Corp.

Circle 264 on reader service card

USER GROUP TIPS

Helpful hints from members of the nation's user groups

Black Box, White Text in Ventura

White text in a shaded box makes an eye-catching presentation, but if you tried to produce that graphic with early versions of *Ventura Publisher*, all you got was a plain black box. Here's a simple technique that works for release 2.0.

Select the Box Text tool, and then draw a box; it needn't be in its final place on the page since you can position it later. Enter the Graphics menu, and set Fill Attributes to Opaque and Black. Then type the text into the box. Now use the Set Font option to change the color of the text to white, and then print the box.

Bob Levine
NYPC Users Group

Easy Indexing for PC-File:dB Clones

You can speed up *PC-File:dB* searches by tagging data base fields and copying them to an index file. The program will then search only the indexed fields. This handy feature hits a snag, however, if you want to clone an indexed data base format and store the copy *and* its new index in the same subdirectory as the originals. When you try to open either data base, the program forces you to rebuild the original index, which erases the clone's.

One way around this dilemma is to create different index field names by renaming the data base fields when you clone the original data base. First, make sure the clone doesn't contain any records, so *PC-File:dB* can open it without finding bad index entries. [For a good *PC-File* cloning technique, see "Cloning PC-File Plus Data Base Formats," *User Group Tips*, *PCW*, October 1989.]

Then, open the clone and display the Utilities menu. Select the Name function, and press <F10> to edit the field names that appear in the index. Simply adding a single lowercase letter to the field name, as in ADDRESSa or COMPANYb, allows the program to distinguish between the two indexes without obscuring the real field name. The extra letter also serves as a marker for indexed fields. Just remember to change the name of each field you subsequently add to the index.

Dan Shelburne
Modesto PC User Group

Cut Down Those Program-Loading Batch Files

Most people create several short batch files, each of which logs on to a directory and loads an application. For example, this one loads *Microsoft Word:*

```
C:
CD\WORD
WORD
```

These batch files work fine, but because of the way DOS stores files on disk, a few small files can eat up a lot of space. If your disk space is at a premium, here's a single general-purpose batch file called GO.BAT that uses DOS's replaceable parameters to load instead of specifying a directory to log on to and an application to run:

```
C:
CD\%1
%2 %3 %4 %5 %6 %7 %8 %9
```

To switch to the \WORD subdirectory and load WORD.COM, for example, type GO WORD WORD at the DOS prompt. GO also lets you enter an application's optional parameters. For example, GO WORD WORD BIKE /G will load *Word* in graphics mode and open the file BIKE.

Paul Katzer
San Francisco PC User Group

Chip in! If you're a member of a user group and have tips to share, send them to PC World. *We pay $25 for each published tip. Or if you have a business problem that requires a PC solution, get in touch with our experts. See How to Contact PC World, page 4.* ●

POWER TIP NO. 74

Easy SideKick Plus Phonebook Searches

Here's a quick way to track down *SideKick Plus* Phonebook entry forms by searching for keywords in the text or attached notes. From the Phonebook screen, press <Ctrl>-QF. When *SideKick* displays the Search menu, press F to search the text of a form, A to search attached notes, or E to search everything—forms and notes. Next, type the search string and press <Enter> to locate the desired form.

George Beinhorn
Nevada City, California

Every week our subscribers take cheap shots at each other.

The GEnie™ service lets you take your best shots without shooting your budget. That's because our non-prime time rates are good and low. In fact, it's just $6 an hour for 1200 baud access.*

And that means more time for more fun and games. Exciting multi-player games like Air Warrior, Stellar Emperor, Orb Wars and Gemstone. Where you can test your skills against some of the best in the world. Plus enjoy classics like chess, checkers, backgammon, black jack and Reversi. At rates so good you're sure to come out a winner.

And with GEnie signing up is as easy as one, two, three.

(1) Set your modem for local echo (half duplex), 300 or 1200 baud.
(2) Dial 1-800-638-8369. When you are connected, just enter HHH.
(3) At the U#= prompt simply enter XTX99637, GEnie then RETURN.

And have a major credit card or your checking account number ready. For information in the U.S. or Canada, call 1-800-638-9636. Or write GE Information Services, 401 North Washington St., Rockville, MD 20850.

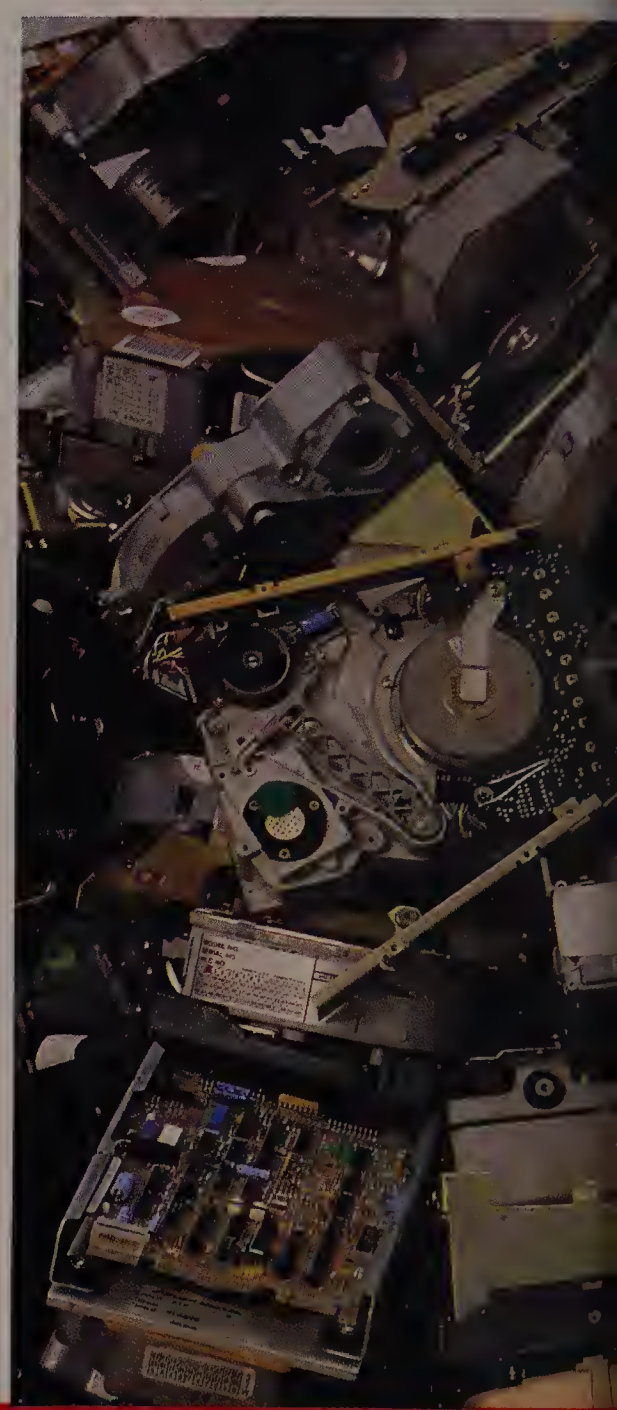
We bring good things to life.

**Applies only in U.S. Mon.-Fri. 6PM-8AM local time and all day Sat., Sun., and national holidays. Subject to service availability. Some services may be subject to a surcharge. Prices effective May 1, 1989.*

What Can You Find

- ☐ Your customer database?
- ☐ Your accounts receivable?
- ☐ Last year's tax records?
- ☐ Letters to clients and associates?

Before You Give Up . . .



Call Mace Data Recovery.

Fast and accurate recovery of information from bad disks can save your business. Take advantage of trained technicians and years of experience to save your files from the junk pile. 1-800-523-0258.

400 Williamson Way, Ashland, OR 97520
503-488-2322

Paul Mace
DATA RECOVERY

n This Picture?

- ☐ Year-end divisional sales spreadsheets?
- ☐ Inventory records?
- ☐ Annual marketing budgets?
- ☐ The man who wrote the book on data recovery!

Circle 230 on reader service card

CREATE DBMS APPLICATIONS FASTER AND EASIER THAN YOU CAN IMAGINE.

With or Without Programming

You deserve rich DBMS applications created your way—whether you're a serious programmer or a dedicated non-programmer. Clarion gives you outstanding benefits either way, without compromise; and the Clarion Developers are a DBMS family that your requirements can never outgrow.

VERSION 2.0
NOW IMPORT/EXPORT dBASE, 1-2-3 AND ASCII

PROFESSIONAL DEVELOPER SLASHES DEVELOPMENT TIME AND COST. Thousands of users of Clarion's Professional Developer have slashed development time and cost 2-10 times...and you can too. PC Week said: "Clarion makes...dBASE and R:base look tired, crotchety and limited in scope." And no wonder. Professional Developer satisfies every need of the most demanding, experienced programmer, yet its application generator lets casual database developers use it easily and comfortably. Applications are totally customized, with your own unique "look and feel." And they are completely open-ended.

A COMPLETE PROGRAMMING ENVIRONMENT. Professional Developer's robust language is surrounded by a full set of integrated utilities. You can even include routines written in C and Assembler. Test programs without linking. Copy and distribute your programs as .EXEs...free. You have precise control of file relationships, buffers and caching, transaction processing and encryption. There's no practical limit to keys, fields, records or files. And there are optional Graphics, Communications and Financial Language Extensions. Unlimited network support is included in the base price...no "LAN Packs" to buy.

dBASE FILES? NO PROBLEM. Although the Professional Developer includes import and export of dBASE, BASIC or DIF files it can optionally process dBASE records as they are, without conversion.

A LEARNING CURVE THAT'S A GENTLE SLOPE. With Professional Developer you'll create a dazzling application in your very first session. PC Week also said..."CLARION is easy to learn and easy to use." You'll get all the help you'll ever need from Clarion Software's full range of support services."

PERSONAL DEVELOPER IS SIMPLY AMAZING. Even if you don't need or want a programming environment you can still create colorful and flexible multiple file applications. With Clarion's Personal Developer you'll enjoy the same application generator that is included with its "big brother."

"QUICK START" APPLICATIONS IN STOP WATCH TIME. Personal Developer includes the unique Quick Start module. You only take about a minute to fill out one screen and describe your data in everyday terms—then watch as Personal Developer produces your applications: file, screens and reports...in a total of 3 to 5 minutes!

APPLICATIONS WITH ROOM TO GROW. After Quick Start you can include additional files, screens, reports, or change things—almost anything—to suit yourself. Add relational file "look-ups," computed fields, and "hot keys." You can continue to tailor your application weeks or months later. And as a bonus you get eight documented applications that you can modify or use as is.

SHARE YOUR CREATIVITY WITH OTHERS. Copy and distribute your programs with a free run time.

MONEY BACK GUARANTEE. ***Order the Clarion Personal Developer from Clarion Software today for only $199; if not completely satisfied, return it within 30 days for a complete refund, less a $15 handling charge.***

SEE US AT FALL COMDEX IN THE SOFTSEL BOOTH #1728

Call for information about products, services, and dealers nearest you.

THE CLARION PRODUCT INFORMATION CENTER
800-354-5444

CLARION SOFTWARE™
150 East Sample Road, Pompano Beach, Florida 33064
305-785-4555, Fax 305-946-1650

Clarion Software Products run on any IBM PC, PS/2, or true compatible with 512K of memory and a hard disk. Clarion Professional Developer, Clarion Personal Developer and Clarion Software are trademarks of Clarion Software. Copyright 1988 Clarion Software. dBASE is a registered trademark of Ashton-Tate. R:base is a trademark of Microrim.

Circle 38 on reader service card

CONSUMER WATCH

Advice and information for the computer consumer

As the dBASE industry struggles out of its state of confusion, here's practical advice for business buyers on how to cope with the proliferation of competing standards.

Anita Amirrezvani

Who's Minding the Store?

A few years ago, the standard-bearer for the dBASE language was unquestionably Ashton-Tate. But now many users and developers aren't so sure.

Contrary to expectations, the release of *dBASE IV 1.0* has failed to put Ashton-Tate back on top. The industry is buzzing with controversy over whether *dBASE IV* is a useful product, given its problems with memory management and buggy SQL. Although Ashton-Tate originally promised a corrected version 1.1 sometime in the third quarter of 1989, it's uncertain when the company will deliver this fix.

As a result, Ashton-Tate may have permanently tarnished its image among developers. "Ashton-Tate is no longer perceived as a leader in dBASE technology," claims Mike Masterson, head of the Silicon Valley dBASE Society. "The company rested on its laurels with *dBASE III Plus*, and the only thing that kept it going was the clones."

Two significant competitors, Fox Software and Nantucket, have taken leadership roles in dBASE language technology development. Fox Software's *Foxbase+* is a broad-based, inexpensive product that surpasses *dBASE III Plus* with better performance and extensions to the dBASE language; Nantucket's *Clipper* provides a superior high-end application-development environment. WordTech's *dBXL*, while slower than *dBASE*, offers an easy interface (see *Five Against IV*, *PCW*, May 1989).

Faced with this competition, Ashton-Tate has moved aggressively to regain control of its most valuable commodity, the dBASE language. Ashton-Tate's suit against Fox Software, for example, is widely perceived as an effort both to monopolize the language and to squash an embarrassingly successful competitor. Ashton-Tate has also formed the dBASE Language Advisory Board (dLAB) and selected 15 members to provide input on the language's future direction.

Even some of dLAB's members, who refer to themselves as thorns in CEO Ed Esber's side, believe that Ashton-Tate's position hurts the language more than it helps. "Big thorn" Russell Freeland, a dLAB member and president of Synergy, a consulting firm in Fort Lauderdale, Florida, says the dBASE language is becoming too diversified. "There is no defined center and no defined standard, mostly because one vendor—Ashton-Tate—claims to own it," says Freeland.

As a result, other vendors are charting alternate courses with their dBASE-language products to avoid lawsuits and provide users with needed enhancements. Nantucket is moving *Clipper* toward object-oriented programming. Fox's new product, *FoxPro*, is expected to depart slightly from *dBASE IV* compatibility in its report writer and template language system.

Clearly, having many different dBASE language products to choose from benefits developers. "As a programmer, I love having a choice," says dLAB member Tom Rettig, president of Tom Rettig Associates in Beverly Hills, California. "Consultants should know all the languages so that they can develop the best solution for each client."

But others would prefer more coherence. "In an ideal world, I'd

(continues)

Who put Chipsoft in the chips?

Mike Chipman, creator, founder and president of Chipsoft Inc. tells why PC WORLD is an integral part of his successful strategy to make Turbo Tax the country's #1 tax software package.

PC WORLD A Great Source for Leads

"PC WORLD has given us a big boost in response to our advertising. From the start, we've tracked the source of our sales, and PC WORLD has been a great source for leads. Advertising in PC WORLD has put us in the minds of computer software customers."

Hitting the Target Market

"PC WORLD is a critical part of our marketing strategy for a number of reasons. Right out of the box, it's been a quality publication with a quality audience. And I believe PC WORLD's readership matches our target market exactly."

Selling a World Class Product

"The PC WORLD World Class Award we got for Turbo Tax means a whole lot to us. It means that customers like what we're doing. In effect they're telling us that seven days a week and late nights have paid off. People make purchase decisions based on the World Class Award too. I've bought programs that I hadn't heard of before, just because PC WORLD readers had recommended it."

Chipsoft's Success and PC World

"Chipsoft is the leading producer of tax software. And that's happened in just four years. Why? Because our software is easy to use and it works quickly – that's what personal computers are all about. Because we're bigger, better, faster technologically than the competition. And again because of PC WORLD. From the start they've been a part of our strategy and they most assuredly will continue to be."

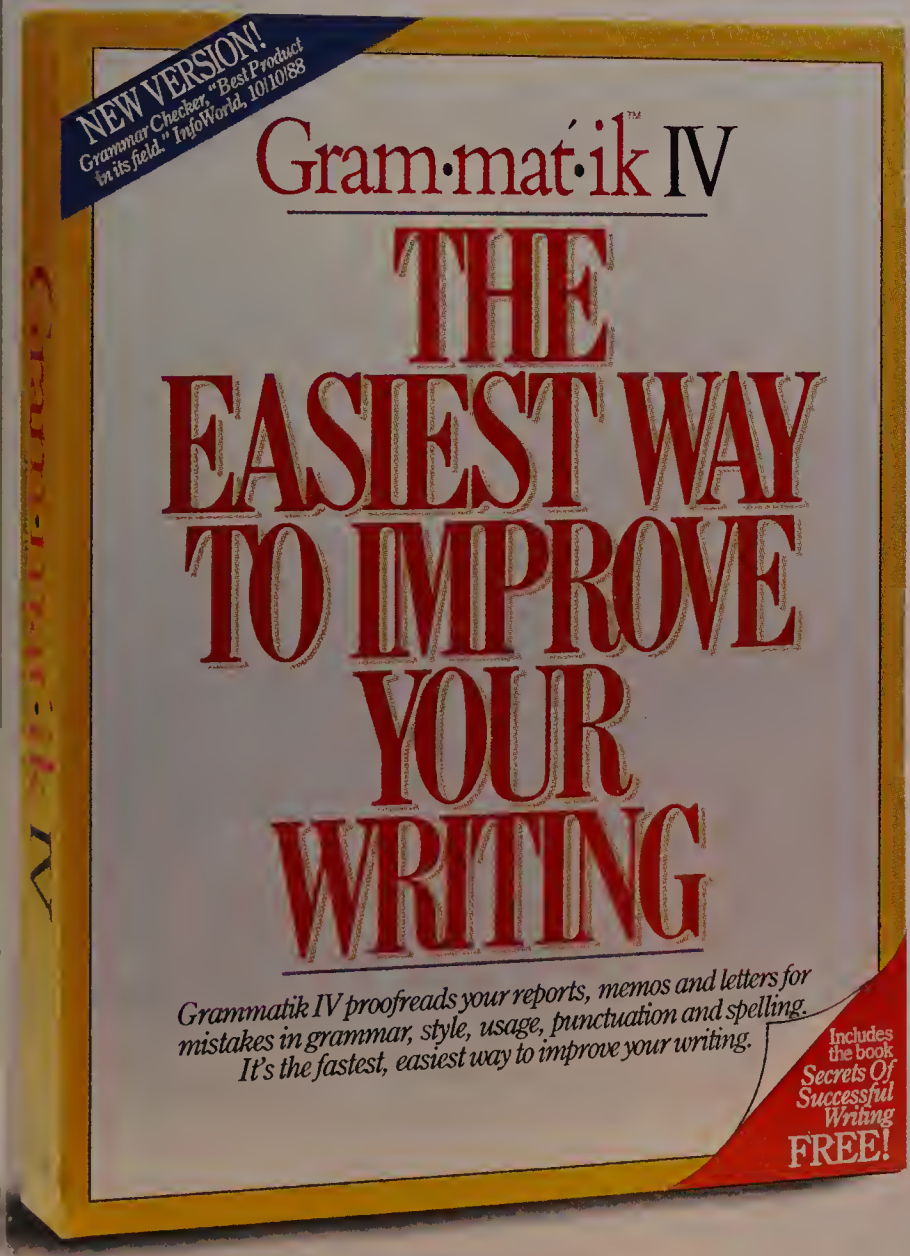
PC WORLD WORKS

PC WORLD

Circle 900 on reader service card

New & Improved

Cliché



Introducing Grammatik IV

Write Better Or Your Money Back. That's the Grammatik guarantee. Because now that we identify thousands more writing errors, and work inside WordPerfect® 5, Microsoft Word® 5.0, WordStar® 5.5 and Professional Write® 2.1, Grammatik IV is as convenient as your spelling checker. And as powerful as an English teacher with a new red pen.

New Grammatik IV actually proofreads your writing, giving you immediate, on-screen feedback on errors in grammar, style, syntax, improper sentence construction, subject/verb agreement, passive voice, and more. It shows errors in context, and *lets you make corrections immediately.* It even includes grammar and style help for instant advice on everything from adverbs to split infinitives.

All of which means you can improve your writing as fast as you can tap a key.

With Grammatik IV your letters, memos, reports, proposals . . . all your writing will be clearer, more concise, and more persuasive from the very first day. Or your money back.*

Call today to order, or for more information. Because until December 1st, every 50th caller gets a complete, free Grammatik IV. And every caller gets free writing help: DeWitt Scott's new book, *Secrets of Successful Writing.*

Only $99, Call (800) 872-9933

*(Ask about our network edition**)*

Gram·mat·ik™ IV

Powerful Writing Improvement

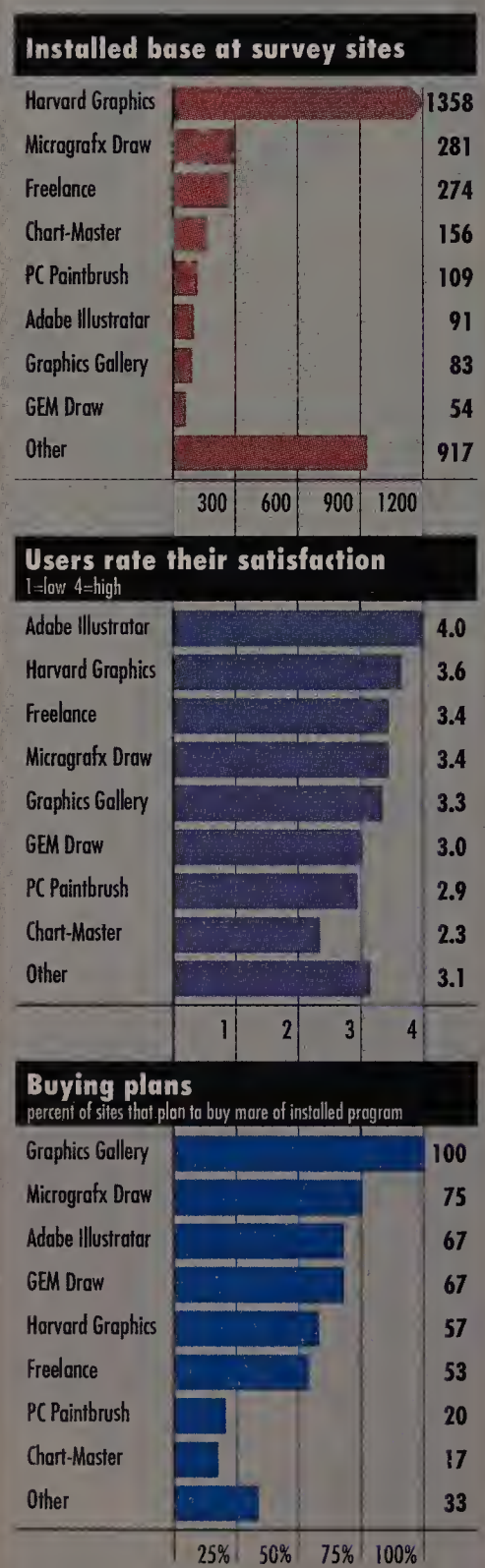
Reference Software™

*Reference Software International, 330 Townsend St., Suite 123, San Francisco, CA 94107. (415) 541-0222. *Try Grammatik IV risk-free. If not completely satisfied, return it to your participating dealer within 30 days for a full refund (requires proof of purchase and applies to participating dealers within North America). Grammatik III users call for a $29 upgrade. Now includes 3½" and 5¼" diskette sizes. **Novell Network Edition (for up to five users)—$189. WordPerfect is a registered trademark of WordPerfect Corporation. Microsoft Word is a registered trademark of Microsoft Corporation. WordStar is a registered trademark of WordStar International. Professional Write is a registered trademark of Software Publishing Corporation. Grammatik is a trademark of Wang Laboratories, Inc. © 1989 Reference Software International*

Circle 282 on reader service card

RATE YOUR SATISFACTION: Graphics Software

In sheer volume, easy-to-use *Harvard Graphics* outstrips all the other programs listed in this survey of large organizations. But *Adobe Illustrator*, a draw program, pulls down a better user satisfaction rating. It also ranks higher on the plan-to-buy list, along with two other draw programs, *Micrografx Draw* and *GEM Draw*.



Source: International Data Corporation. From a survey conducted in May 1989 of 175 large organizations, each with at least 50 PCs.

like to see good stuff from a single vendor," says dLAB member Candy Prince, a staff engineer for Union Carbide Corporation. "Mixing 57 varieties doesn't always work," because nuances crop up even between compatible products.

Some people feel that developing an industrywide dBASE language standard, at least for such basic conventions as windowing, would help arrest the fragmentation of the language. But so far, standardization efforts have fallen apart. An IEEE committee, which succeeded in agreeing only on *dBASE III Plus* as a basic standard, has temporarily disbanded "due to lack of interest," says Martin Rinehart, former chair of the committee and founder of Wallsoft Systems. "My distinct impression is that some vendors feel it's to their advantage not to have a standard," says Rinehart. "The user community should reject these vendors' monopolistic solutions."

Ashton-Tate has set the tone by insisting that it is the only legitimate custodian of the language. "Our view is that Ashton-Tate offers the best solution," says company vice president Eric Kim categorically. But Nantucket isn't keen on the standards idea, either. "We just don't care about meeting some arbitrary list of standards," says Nantucket president Larry Heimendinger. "This may sound snobby, but we suggested once that we might try to be compatible with somebody else's products, and we got shouted down by our developers."

Even Fox Software is lukewarm. "If all the companies decided they were interested in a standards effort," says Richard Ney, director of marketing, "then certainly we would be, too. But with the lawsuit and the fragmented market, it doesn't make a good deal of sense."

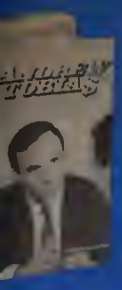
On the other hand, WordTech's Mike Gardner, vice president of research and development, says his company supports the standardization efforts wholeheartedly. "I think all the vendors should forget their selfish self-interest and promote the dBASE language," he says.

Despite the industry's fractiousness, Mark Schnapp, an International dBASE Users Group member and representative for the now-dormant IEEE committee, says he's optimistic about getting vendors together, even Ashton-Tate. "Ashton-Tate is going to become a lot more responsive—or dead," says Schnapp. But he says the standards committee lacks the infrastructure right now to organize interested parties.

Meanwhile, the market will decide which product becomes the next data base leader. Many analysts are betting on *FoxPro;* others think Ashton-Tate has a good chance of regaining its reputation with a corrected *dBASE IV.* But while the industry is making up its mind, what should the business buyers do? Cary Prague, a dLAB member and assistant director for corporate finance at The Travelers' Companies, offers this advice: "Stick with what you've got until the market shakes out."

WordTech's Mike Gardner offers two interim suggestions: "If your applications aren't too ambitious, try to use *dBASE III Plus* code because it's easy to

(continues)



FREE
MANAGING YOUR MONEY
DEMO DISK

No Postage
Necessary if
Mailed in the
United States

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 267 ROCHESTER, NY

Postage Will Be Paid by Addressee

MANAGING YOUR MONEY DEMO DISK.
FREE** BUT DEFINITELY **NOT ORDINARY.

P.O. Box 10660
Rochester, NY 14610-9934

FREE

MANAGING YOUR MONEY

DEMO DISK

MANAGING YOUR MONEY DEMO DISK.

FREE BUT DEFINITELY ***NOT ORDINARY.***

This demo disk **won't** drag you through screen after screen of advertising. And it **isn't** self-running. It will make you think and explore.
It includes six live, interactive tools you will personalize with your own financial data. Tools like **Mortgage Refinancing** and **Planning For Your Child's College Education** among powerful others.

meca® We want you to know what you're buying.
And, **YES**. We're confident you'll buy once you try!!!

Name _____

Address _____

City _____ *State* _____ *Zip* _____

( ) PCW 11/89

Daytime Phone _____ *Code*

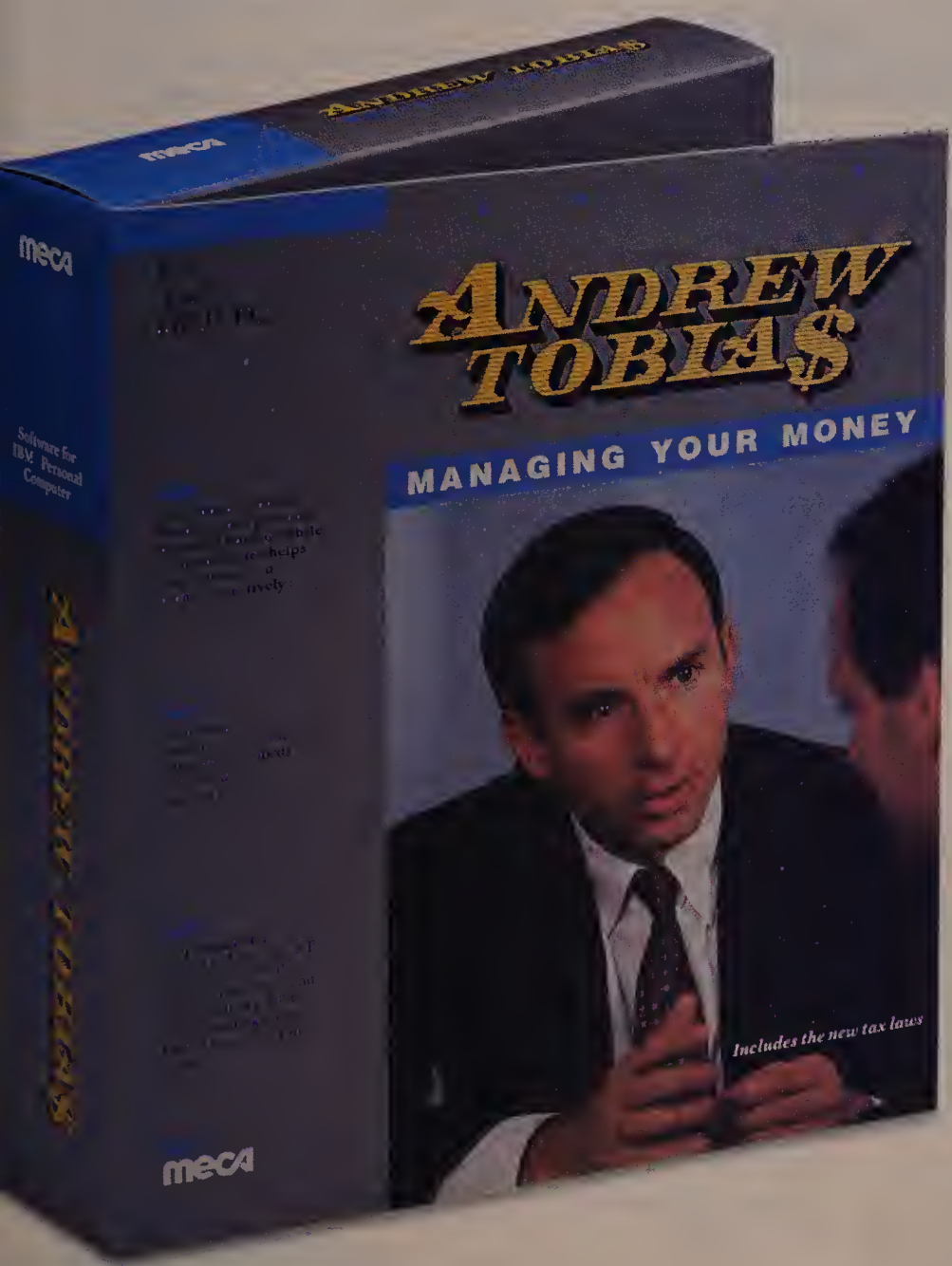
Please check **only one** of the following: ❑ IBM ❑ Apple ❑ Mac Version

Requires:

- 256K IBM® PC, XT, AT and compatibles. DOS 2.0 or later. 80-column monitor. At least one floppy drive
- 128K Apple IIe, IIc, IIc Plus, IIGS, 80-column monitor. 2 disk drives.
- Macintosh Plus, SE, II, 2 disk drives (one at least 800K).

IBM and Apple demo disks are available in 5.25" format only. Actual program available in 5.25" and 3.5"
Please allow up to 4 weeks for delivery. Limit 1 free demo disk per household. Good in the U.S. (including Canada, Puerto Rico, U.S. Territories, APO's and FPO's) except where prohibited or taxed. Requests will be honored while supplies last. Offer expires May 1, 1990. © 1989 MECA Ventures, In

FINANCIAL POWER MADE SIMPLE



Managing Your Money® gives you all the tools you need to make better financial decisions. Andrew Tobias will convince you that powerful software doesn't have to be hard to learn and use.

- Budgeting
- Check Writing
- Built-in CheckFree™ option for electronic bill paying through the Federal Reserve
- Tax Planning
- Financial Calculator: Mortgage, Retirement, College Planning, and more
- Insurance
- Loan Amortization
- Accounts Payable and Receivable, Excellent Business Features
- Portfolio Manager
- Net Worth Calculator

Why not explore the power and simplicity of Managing Your Money for yourself?

Just tear and mail the postage-paid card today and your **FREE Demonstration Disk** will be on its way to your home.

The card is missing?

Call **1-203-222-9150**
or write:
MECA Demo Disk
P.O. Box 907 · Westport, CT 06881.

Now Over 500,000 Users!

"One of the best all-around programs ever written. It's easy to use even if you're a novice at computer technology and personal finance."
New York Daily News, "Money Talks"

"Nothing beats Managing Your Money."
PC Magazine

PC WORLD
1985–1989
WORLD CLASS
AWARD

For 256K IBM® PC, XT, AT and compatibles. DOS 2.0 or later. 80-column monitor. At least one floppy drive.
128K Apple IIe, IIc, IIc Plus, IIGS. 80-column monitor. 2 disk drives.
Macintosh Plus, SE, II. 2 disk drives, one at least 800K.
Available in 5.25" and 3.5" disks. Not copy protected.

© 1989 MECA • 327 Riverside Avenue • Westport, CT 06880

meca®

Circle 186 on reader service card

move from product to product." Another option, he says, is to modularize the code so that a windowing procedure, for example, can easily be rewritten in another dialect.

To help users cope with multiple-product environments, David Kalman, editor in chief of *Data Based Advisor*, has written a 1000-page reference guide called *The dBASE Language Book* ($27.95 from Microtrend Books; 800/336-6060), which cross-references all the linguistic variations on *dBASE III Plus* in *Clipper*, *dBXL*, *Quicksilver*, *dBASE IV*, and *Foxbase+*.

Code converters, which translate code from one dialect to another, are another helpful option. Ashton-Tate's $49.95 *Step Forward*, for example, converts code from competing products into *dBASE IV* syntax.

In the future, data base vendors and server companies offer the promise of SQL access to data bases on multiple platforms. As these solutions become more clearly articulated, business buyers will have a better shot at developing sensible strategies for managing precious data.

SHOP TALK

Fast Micro Improves Its Policies

Fast Micro, a mail-order company in Phoenix, Arizona, has improved its return policy. The company's previous policy stated that "all returns are subject to a 15 percent restocking fee." The new policy is as follows: Computers returned within 30 days are fully refundable (no restocking fee); so is any *unopened* hardware and software. A 15 percent restocking fee is charged on *opened* hardware and software (the seal on the software disk package must be intact).

Refunds don't include shipping costs, and consumers must obtain a return authorization number before returning a product.

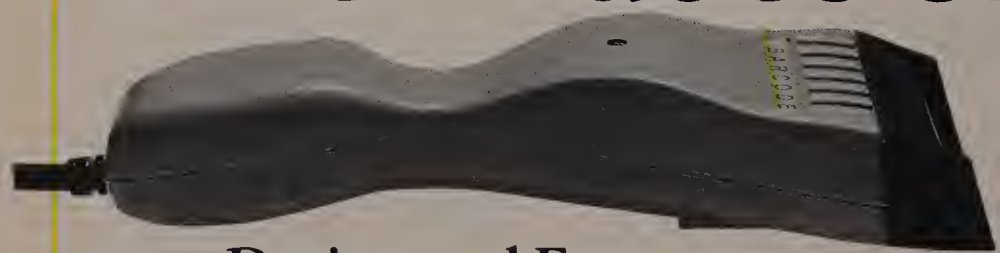
A Bug Without a Fix

I want to alert *Consumer Watch* readers to a major bug in Quadram's JT Fax 9600 fax board.

A few months ago I purchased this product and installed it in an AT compatible. From the beginning it transmitted random pages instead of entire docu-

(continues)

The Pluses of ScanPlus



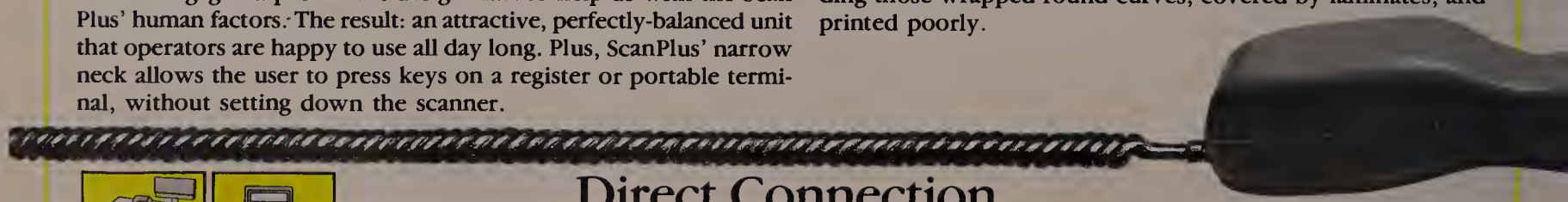
Easy, Fast Reading

Reading with the ScanPlus CCD scanner is as easy as pointing. Hold the head of ScanPlus over the code and it reads. No contact is necessary, nor is trigger pulling or aiming.

What does ScanPlus' industry-leading 200 scans/sec mean to the user? Virtually instant reading of all codes, including those wrapped round curves, covered by laminates, and printed poorly.

Design and Ergonomy

We engaged a prominent design firm to help us with the ScanPlus' human factors. The result: an attractive, perfectly-balanced unit that operators are happy to use all day long. Plus, ScanPlus' narrow neck allows the user to press keys on a register or portable terminal, without setting down the scanner.



Direct Connection

ScanPlus has on-board intelligence to interface directly to RS-232 systems, O.E.M. systems (with wand or laser emulation), and cash registers from IBM, NCR, TEC, and many others. A special version allows a ScanPlus to be unplugged from a cash register, then used on a portable terminal. And of course ScanPlus is the perfect complement to Barcode's complete line of MiniBar course ScanPlus is the perfect complement to Barcode's complete line of MiniBar and MaxiBar readers and Planet token-ring network products.

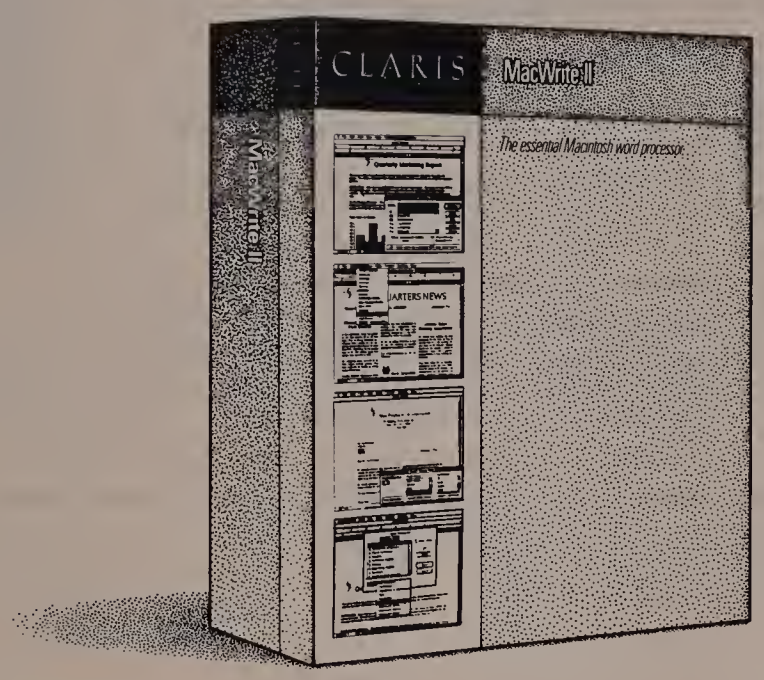
ScanPlus, MiniBar, MaxiBar, and Planet are trademarks of Barcode Industries.

Barcode Industries, Inc. Ammendale Technology Park. 12240 Indian Creek Court, Beltsville, MD 20705. Tel: (301) 498-5400. Fax: (301) 498-6498. Tlx: 506144

BARCODE INDUSTRIES

Circle 10 on reader service card

If your Mac is at a loss for words, you'd better talk to Software Spectrum.



Get MacWrite II at Software Spectrum for only $162.

The computer best known for its artistic prowess also has a great talent for working with words. And Software Spectrum has just what you need to unleash it. Say hello to MacWrite® II, the new full-featured Macintosh® word processor from Claris™.

MacWrite II combines all the advanced tools you need to prepare professional-quality documents. From one-sentence memos to 1,000-page reports. Features include footnotes and endnotes. Graphics integration and multi-column capability. A 100,000-word dictionary and 220,000-synonym thesaurus. Plus a powerful mail merge function and editable page preview.

MacWrite II even lets you open several documents at once. And you can read and write to files from other Macintosh word processors like Microsoft® Word. Best of all, MacWrite II has the same look and feel of the original MacWrite. So you probably already know how to use it.

What you may not know is all that Software Spectrum has to offer. Like a huge selection of in-stock titles. Substantial savings off suggested retail. And many special services for corporate customers that make software purchasing quick and hassle-free.

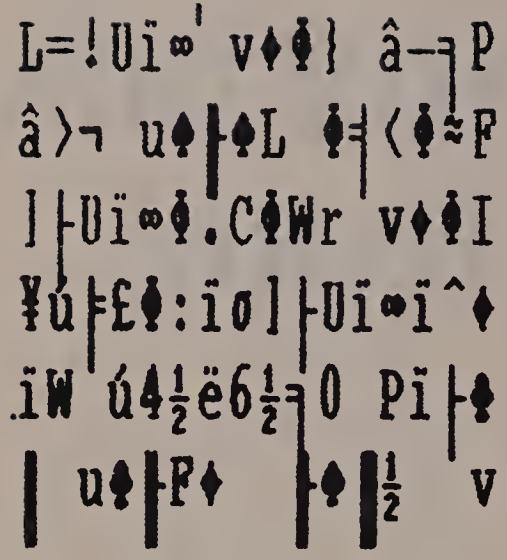
Plus, we're one of the few resellers in the entire country that can upgrade you to MacWrite II for no more than $75. All you need is any previous version of MacWrite.

So give Software Spectrum a call at 1-800-624-0503. Because if you're a Macintosh user, we definitely ought to talk.

SOFTWARE SPECTRUM

10420 Miller Road • Dallas, Texas 75238 • 800-624-0503

Claris is a trademark and MacWrite is a registered trademark of Claris Corporation.
Mactintosh is a registered trademark of Apple Computer, Inc. Microsoft is a registered trademark of Microsoft Corporation.



Your Spreadsheet Can't Read It Either.

Now, you can translate mainframe and microcomputer report information directly into PC spreadsheets and databases with AutoImport.™ The "must" utility for any PC user who analyzes and uses corporate data resident in other systems.

AutoImport–from the creators of the award-winning file transfer utility, The Brooklyn Bridge.™ See your dealer or call (800) 344-6783.

Come visit us at Booth #B-1944 at the COMDEX show for a personal demo.

AutoImport™

WHITE CRANE

The Brooklyn Bridge is a trademark of Fifth Generation Systems, Inc.

Circle 296 on reader service card

ments, even while indicating that the entire transmission had been successfully received.

Repeated calls to technical support resulted in a complete denial of the problem. Finally, after months of wasted time, a technical support representative admitted that the company was aware of the problem, that there was no fix, and that everything I had been told was untrue.

Steven I. Kern
Morristown, New Jersey

Quadram responds: We acknowledge this problem. Due to its intermittent nature, it took some time for our support staff to identify it. Although the JT Fax line has been sold to Hayes, we will continue to work closely with Hayes to find a solution.

Timothy D. Cutler
Business Marketing Manager

Great Package, Poor Support?

After reading *PC World*'s article selecting the Vendex HeadStart III as a Best Buy (*The Hardware Shelf*, June 1989), I felt I should inform your readers of the problems I've encountered. Shortly after purchasing the system, I ran into a problem with the video board; after several trips to the computer store the problem was fixed. A few months later the system clock stopped working. When I went back to the store, they told me they no longer carried Vendex computers because they couldn't receive the technical support they needed. I called Vendex's support number to get a listing of local repair shops; every location I called said they didn't want to be bothered because Vendex wouldn't support them.

Finally I found a computer store that felt sorry for me and helped me out. After that, I decided to purchase an AST Bravo/286. I tried to use Vendex's application programs and found that they are compatible only with Vendex hardware. Vendex may offer an impressive package, but it doesn't offer the necessary support and compatibility.

Gene A. Palecco
Bloomfield, New Jersey

Vendex responds: HeadStart is now a division of North American Philips Corporation, and as in any transition, we have experienced growing pains. But every effort is being made to improve consumer support.

Frank R. Muniz
Director of Merchandising Support

Editor's note: None of the Vendex software packages bundled with the HeadStart will work on other systems, according to Mr. Muniz, because they have been modified to improve their integration. For example, the HeadStart version of 3D Perspective Graphics *works with* Framework II *spreadsheets, unlike the off-the-shelf version.*

Take action! If you've got a complaint or a compliment, send it to Consumer Watch. *We'll follow up and publish letters with the broadest interest. For more information, see How to Contact PC World, page 4.* ●

Either Way You Look at It, Peachtree Accounting Saves You Money.

When it comes to accounting software, no one offers you more for your money than Peachtree. Now we're offering you two ways to buy our best-selling accounting software — and two great ways to save.

Peachtree Complete™ II is our premier business accounting system. Designed and sold as a $5,000 accounting system, the latest version of Complete II represents a vastly expanded and greatly improved package that sells for an unbelievably low $199. Find out what over 250,000 satisfied users already know — no other accounting system offers so much for so little.

And now, for businesses who want to make the most of their accounting information, Peachtree's Double Bonus Bundle gives you Peachtree Complete II Accounting plus its own custom reporting tool, Peachtree Data Query II™ Enhanced. The Double Bonus Bundle includes both systems — regularly priced at $199 each — for just $298. That's a savings of $100! Either way, Peachtree offers you the most accounting you can get for your software dollar.

PEACHTREE'S DOUBLE BONUS BUNDLE

Includes Peachtree Complete II plus Peachtree Data Query II

JUST $298

SAVE $100

With PDQ II Enhanced You Can:

- Create on-screen inquiries to display data
- Present data in line or bar graphs
- Use any of over 20 pre-defined reports
- Modify pre-defined reports and save the formats
- Create your own reports and save the formats
- Transfer accounting information to spreadsheet and database programs like dBASE III® and Lotus 1-2-3®

And More!

A Recent Survey by the American Institute of CPAs Reports More Accountants Use and Recommend Peachtree Than Any Other Accounting System!

Peachtree Complete II is a comprehensive accounting system developed to meet the needs of small- to medium-size businesses. It comes with eight high-power modules that may be used individually, or fully integrated for maximum accounting efficiency:

- General Ledger
- Accounts Payable
- Inventory
- Fixed Assets
- Accounts Receivable
- Invoicing
- Job Cost
- Payroll

And Peachtree Complete II is designed using the latest software innovations, like full-color scrolling reference tables, pop-up windows, and short-cut keyed menus. We've expanded to allow an unlimited number of companies, added service invoicing, range printing, and more.

Peachtree Complete II's error handling is quick and easy, with plain English messages and suggestions. Context-sensitive Smart HELP is on-line, all the time. And as always, Complete II comes with the most thorough documentation — a separate quick-start Installation Guide, Accounting Primer, seven-volume Reference Library, and extensive on-line tutorials on each module — all at no extra charge.

Now you can extend the power of your Peachtree accounting to include custom reporting and analysis, and save even more money! Order the Double Bonus Bundle and you'll get Peachtree Complete II, plus Peachtree Data Query II Enhanced, for just $298.

PDQ lets you turn raw figures into highly sophisticated reports, allowing you safe, easy access to valuable information from all eight Peachtree Complete II modules. PDQ's simple, clear approach gives you maximum control and flexibility. You tell PDQ what information you need, and PDQ looks through your accounting files, finds it, and presents it to you any way you want it — on screen or printed, as a graph, in report form, or ready for export to another software package.

You can begin creating reports in just minutes, thanks to all new user instructions and on-line practice sessions that lead you through the system and build confidence as you go. With Peachtree's Double Bonus Bundle, accounting and custom reporting go hand-in-hand, and that makes good business sense.

MONEY BACK GUARANTEE. We stand behind Peachtree Complete II and PDQ II with a toll-free hotline for technical support ($1 per minute, $20 minimum on your credit card) and a 30-day money-back guarantee when you buy directly from Peachtree. If for any reason you're not satisfied, you can return your package within 30 days for a prompt refund. That's the Peachtree Software promise. A $25 restocking fee applies to all returns.

Peachtree Complete II: the Business Accounting System for just $199, and Peachtree's Double Bonus Bundle for just $298. Either way you look at it, Peachtree Software saves you money. Order today!

HARDWARE SPECIFICATIONS: Requires PC/MS-DOS version 2.0 or higher with 384K of usable memory (512K required with DOS 3.3) and a minimum 10 MB hard disk. For use with the IBM® PC, PC XT, PX AT, Personal System/2™ and compatibles. 3 ½" media optionally available. Not copy protected.

Lotus 1-2-3 is a registered trademark of Lotus Development Corporation. dBASE is a registered trademark of Ashton-Tate Corporation. IBM is a registered trademark and Personal System/2 is a trademark of International Business Machines.

PEACHTREE COMPLETE II

STILL ONLY $199

General Ledger
- Chart of Accounts includes 76 suggested and 26,000 user-defined accounts.
- Comparative financial statements.

Accounts Receivable & Invoicing
- Maintains open item or balance forward customers.
- Up to 14,400 customers.
- Prints product or service invoices.

Accounts Payable
- Partial payments of invoices.
- Up to 14,000 vendors.
- Checks printed with unlimited invoice listing on stub.

Inventory
- Supports average and standard costing methods.
- Up to 19,500 inventory items.

Fixed Assets
- Handles 13,000 assets and 13 methods of depreciation.

Job Cost
- Tracks costs and profitability on a job-by-job basis.

Payroll
- Built-in current year tax tables.
- Prints checks, W-2s and more.
- Processes up to 3,900 employees.

And More!

Call Now to Order

1-800-247-3224

(or call 1-404-564-5800)

To Order by Mail Add $12.50 Shipping and Handling.*

(In Georgia add applicable sales tax.)

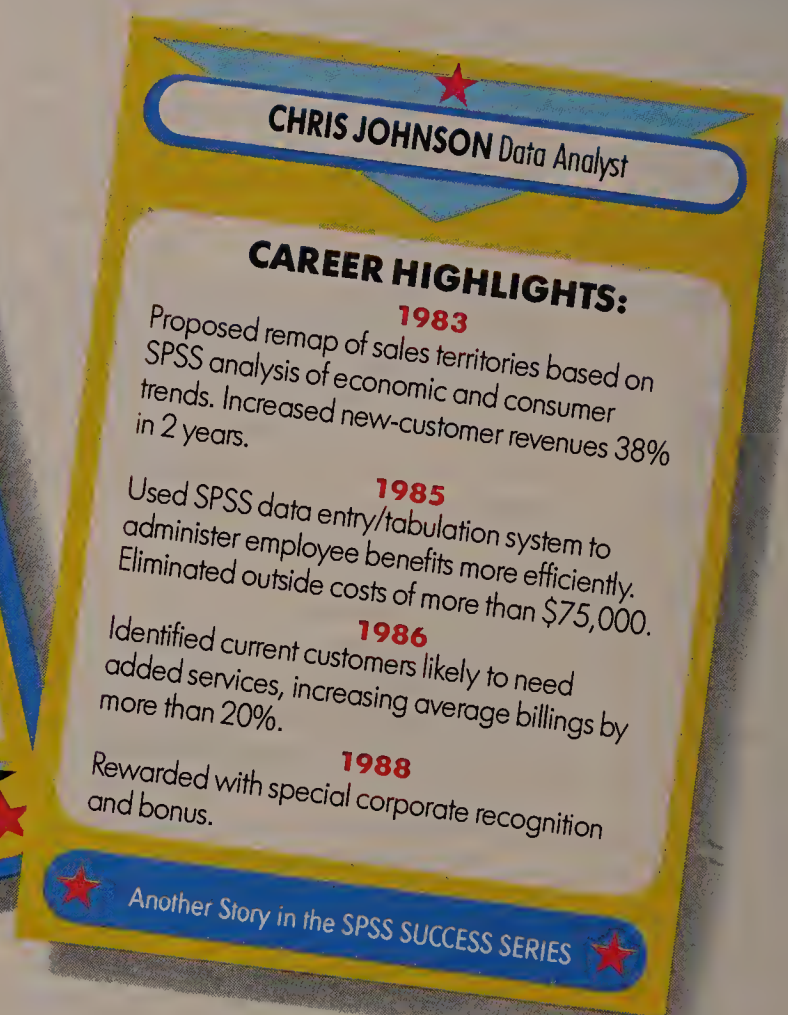
Peachtree Software

4355 Shackleford Road, Dept. PCW, Norcross, Georgia 30093

* Telephone number required on all orders.

Circle 144 on reader service card

We'll take your stats and make you the most valuable player in your league.



PC MAGAZINE EDITORS CHOICE
March 14, 1989

Data analysis software from SPSS gives your PC a winning advantage.

It doesn't matter which field you play hardball in. With the right combination of equipment and ability, you can be a hero.

You get that ability with SPSS. Whether your equipment runs on MS-DOS™ or PC-DOS,™ OS/2™ or a Macintosh.™ So you turn raw data into useful facts. And yourself into a smarter decision maker.

With SPSS and its options, you can interface directly with data from your database, spreadsheet or other application software. Then manipulate it in countless ways. From data entry to advanced statistics, forecasting, presentation and more.

Voted #1 by the fans.

When the readers of *PC Week* chose the top statistical software for "user satisfaction" (12/5/88), their choice was SPSS. And no wonder.

SPSS is designed not only for your computer's operating system, but also for its operator. With menu and help systems, plus an on-line statistical glossary. So you're always in control. For market research, sales analysis, quality control and more.

And you can always count on the training, support, and ongoing upgrades of SPSS. The team that's come through for over 1 million users since 1968.

Find out how SPSS can make you first in your micro league, by calling

(312) 329-3314.

We'll give you the numbers to really stand out in your field.

SPSS inc.

Best in the final analysis.

444 North Michigan Avenue, Chicago, Illinois 60611
SPSS International BV: Avelingen West 80,
P.O. Box 115, 4200 AC Gorinchem,
The Netherlands

SPSS is a registered trademark of SPSS Inc. PC-DOS and OS/2 are trademarks of International Business Machines Corporation. MS-DOS is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Not all options are available on all operating systems.

Circle 252 on reader service card

STAR-DOT-STAR *.*

A global exchange of personal computer discoveries

Automate infrequent commands, check for existing files and directories, make temporary additions to PATH, access multiple LAN printers from MultiMate, archive deleted dBASE records, and improve WHEREIS.

Edited by Tom Swan

4, 3, 2, 1...Backup!

Since I use my computer infrequently, I figured I might forget to perform regular backups. So I added commands to AUTOEXEC.BAT that back up the PC's hard disk automatically every fifth time it boots [see **LISTING 1**].

You initially create a zero-length file named COUNT5. When you reboot the system (or turn it on), COUNT5 is renamed COUNT4, and AUTOEXEC.BAT ends; the next time you restart the PC, COUNT4 is renamed COUNT3, and so on. When you boot the system and COUNT1 exists, the backup begins, and you're prompted to insert the first backup disk in drive A:. When the backup is done, the next command resets the count by renaming COUNT1 COUNT5.

Before running this AUTOEXEC.BAT file, log on to your system's boot drive and create a zero-length file named COUNT5 in the root directory by entering **TYPE COUNT5> \COUNT5**. Ignore the 'File not found' error message.

Charles J. Williams, Jr.
Virginia Beach, Virginia

Editor's note: You can change the BACKUP command to any other command you want to execute every fifth time you boot. You can also change the frequency. To use an 8-step countdown, for example, add appropriate IF statements (use the others as guides), and change COUNT5 in the last command to COUNT8.

C Directory/File Detector

There's no easy way for DOS commands—or batch files—to determine if a certain directory already exists. So I wrote CHECKFOR.C [**LISTING 2**], which checks for the existence of the directory or file name you specify. CHECKFOR returns an errorlevel of 0 if the specified name is not an existing file or directory, 1 if it's a directory, 2 if it's a file, and 3 for syntax errors. Now you can use IF ERRORLEVEL and IF NOT ERRORLEVEL in your batch files to branch to appropriate routines.

Edwin J. Tobias
Greenville, South Carolina

(continues)

```
echo off
if exist count1 goto backup
if exist count2 rename count2 count1
if exist count3 rename count3 count2
if exist count4 rename count4 count3
if exist count5 rename count5 count4
goto done
:backup
cls
echo Insert backup disk in drive A:
pause
backup c:\*.* a:\ /s
rename count1 count5
:done
```

LISTING 1: Add these commands to AUTOEXEC.BAT to back up your C: drive every fifth time you boot.

ANTHONY RUSSO

```
/* CHECKFOR.C by Edwin J. Tobias */



#include <stdio.h>



main(int argc, char *argv[])
{
    if (argc != 2) {
        printf("Error: no directory/file name specified\n");
        exit(3);   /* syntax error */
    }
    else {
    if (fopen(argv[1], "r") != NULL)
        exit(2);   /* it's a file */
    else
        exit(access(argv[1], 0) == 0); /* 1=dir; 0=not used */
    fcloseall;     /* close any open files */
    }
}
```

LISTING 2: CHECKFOR.C lets batch files check whether a directory or file already exists.

```
checkfor %1
if errorlevel 3 goto end
if not errorlevel 2 goto not2
echo %1 is a file.
goto end
:not2
if not errorlevel 1 goto not1
echo %1 is a directory.
goto end
:not1
echo %1 does not exist.
:end
```

LISTING 3: WHATIS.BAT demonstrates the use of CHECKFOR (see LISTING 2).

Editor's note: To compile CHECKFOR.C, use Turbo C, QuickC, *or any C compiler that supports a file access() function. Then copy CHECKFOR.EXE to a directory listed in a PATH command. To see CHECKFOR in action, create and save the batch file WHATIS.BAT (***LISTING 3***). Then issue a few commands at the DOS prompt, such as WHATIS C:\COMMAND.COM and WHATIS \DOS.*

Beating Out New Paths

When I try out new software, I often need to add directories temporarily to my PATH environment variable. To simplify matters, I wrote AP.BAT [**LISTING 4**], which lets you add directories such as C:\MYWORK to the current PATH by typing AP C:\MYWORK. You can also add two or more directories by separating them with semicolons. For example, you could add C:\WORD and C:\123 into PATH by typing AP C:\WORD; C:\123. To reset PATH to its previous state, type AP- and press <Enter>; type AP - to display brief instructions.

Young J. Han
Clemson, South Carolina

Multiple Printers for MultiMate LANs

MultiMate LAN doesn't allow access to more than one printer on a Novell network. When the (N)etwork Printer Type is called, documents are sent to network printer 0 regardless of the device number. *MultiMate*'s technical support personnel agreed this was a problem but could offer no solutions.

By experimenting, I have found I can use Novell's CAPTURE command to redirect output intended for my local LPT2 and LPT3 to network printers 1 and 2. I just issue the following two commands before entering *MultiMate:*

CAPTURE P=1 L=2 NB TI=2
CAPTURE P=2 L=3 NB TI=2

The P= parameter selects the desired network printer, L=

(continues)

```
echo off
if "%1"=="" goto help
if "%1"=="-" goto reset
set oldpath=%path%
path=%1;%path%
goto end
:reset
if "%oldpath%"=="" goto end
set path=%oldpath%
set oldpath=
goto end
:help
echo AP newdir : Add a directory to current PATH
echo AP -      : Reset to previous PATH
:end
```

LISTING 4: AP.BAT adds directories temporarily to the current PATH.

This offer could get you committed.

Start playing Pipe Dream™ and you may not be able to stop! Get a special edition of Lucasfilm Games' exciting new game of skill, strategy, and plumbing, on a FREE eleventh diskette in specially-marked 10-packs of KAO quality diskettes.

Pipe Dream's speed, simplicity, and unlimited playing potential make an ideal, energizing diversion. Just as KAO's 100% lifetime guarantee makes them the ideal diskette selection.

Give them a try and prepare to be committed for life.

KAO

Media from the Surface Scientists

World Headquarters: **Kao Corporation** 14-10 Nihonbashi Kayabacho 1-chome, Chuo-ku, Tokyo 103 Japan, 813-660-7690 Fax 813-660-7789 Telex KAOTYO J24816
In USA contact: **Kao Infosystems Company** 41444 Christy Street, Fremont, CA 94538 (415) 657-8425 Fax (415) 657-8863
In Canada contact: **Kao-Didak Ltd.** P.O. Box 41, 10 Didak Drive, Arnprior, Ont. K7S 3H2 (613) 623-7901 Fax (613) 623-2886 Telex 0533548
In Europe contact: **Kao Corporation GmbH** Infosystems Division, Wanheimer Str. 57, 4000 Dusseldorf 30, F.R. Germany, 0211-4176-0 Fax 0211-413559 Telex 8587565 Kaoe d

Call (800) 443-0100 Ext. 947 today for the name of your nearest Kao dealer. For your Pipe Dream special edition send $2.00 for postage and handling to: Pipe Dream Offer, 41444 Christy St., Fremont, CA 94538. State diskette size (3½" or 5¼") and system type (PC or Macintosh only). Offer available in 5.25" MD2D (IBM PC, XT, AT and compatibles) and 3.5" MF2DD (Macintosh and IBM PS/2). Special edition is 3 game levels only. Pipe Dream and Lucasfilm Games are trademarks of Lucasfilm Ltd. Macintosh is a registered trademark of Apple Computer, Inc. IBM is a registered trademark and PS/2 is a trademark of International Business Machines Corporation. © 1989 Kao Corporation of America.

Circle 148 on reader service card

specifies the local port that will have its output redirected, NB means no banner page, and TI = sets the number of seconds that the network should wait before issuing a printer time-out.

Network printer 0 can still be accessed in the normal fashion. To select network printer 1 or 2, open the Document Print Options screen, enter the appropriate Printer Action Table (PAT) file name for the network printer you want to use, choose (P)arallel Printer Type instead of (N)etwork, and enter 002 (for LPT2) or 003 (for LPT3) in the Device Number field. To print to a locally connected LPT1 printer, use the (P)arallel Printer Type and Device Number 001 (assuming, of course, that a CAPTURE command has not redirected your local LPT1 output to a network printer).

Robert Bell
Fullerton, California

Archiving dBASE Deletions

A simple procedure preserves copies of deleted *dBASE* records in a separate data base file. SAVEDELS.PRG [**LISTING 5**] opens a master file, copies records marked for deletion to

(continues)

DEVELOPER'S TOOLBOX

CD ROMs for Developers

If you purchased Microsoft's *Programmer's Library 1.0* CD ROM, you should have received your free *1.1* upgrade by now. The new CD ROM is stuffed to the gills with facts about OS/2, MS-DOS, *Windows*, networking, and PC hardware. Included also is a three-user version of *Opti-Net* networking software, making this the ideal on-line library for small programming teams (you can add more users at $65 a pop).

Programmer's Library is by far the most impressive PC technical reference ever assembled. Sharing one CD ROM disk is the complete text of the *MS-DOS Encyclopedia* along with programming references for C, Macro Assembler, BASIC, Pascal, and FORTRAN. The disk stores the contents of several books, including Peter Norton's *Programmer's Guide to the IBM PC and PS/2*, *Microsoft QuickC Programming*, and *Advanced OS/2 Programming*, plus volumes 1 through 4 of the *Microsoft Systems Journal*. There's also 15MB of sample code ready for cutting and pasting into your own programs. The list goes on and on.

Best of all is the superb browse program. After searching for keywords, I just click a reference line to view the full text and then click special characters to scan cross-references and study sample code. The browser is so engaging, I often have to force myself to stop reading and get back to work.

Unfortunately, only a few other CD ROM publishers cater to developers. One good CD ROM source is the Bureau of Electronic Publishing. Another is Alde International Publishing, which produces several titles including the *Ada ROM* and the 20MB C *CD-ROM* of public domain C programs—a real find for C source-code collectors. Some of the C programs date back to CP/M days, but I was able to compile much of the code with *QuickC* and *Turbo C*.

I wish one of these companies would consider publishing the remarkable *Moby Words* on a CD ROM. This ten-disk set from Illumind compresses over 500,000 words and phrases plus such extras as 21,400 common names and a file of 9000 star positions. Despite the 7MB of disk space required to hold the uncompressed files, *Moby Words* is a great data source for sort and index benchmarks. And now that I've got the words at hand, I can get to work on that super spelling checker I've always wanted to write.

I welcome your comments. My MCI Mail handle is TSWAN; my CompuServe ID is 73627,3241. —*Tom Swan*

WHERE TO BUY

Ada ROM, C CD-ROM
Alde Int'l Publishing
4830 W. 77th St., Ste. A
Minneapolis, MN 55435
612/835-5240
LIST PRICE: $99 each
REQUIREMENTS: CD ROM drive and MS-DOS CD ROM extensions, C or Ada compiler
TECHNICAL SUPPORT: unlimited free support for registered users, toll number, M–F 9–5
OTHER SUPPORT: none
Reader service no. 695

Bureau of Electronic Publishing
P.O. Box 779
Upper Montclair, NJ
07043
201/857-4300
Reader service no. 696

Microsoft Programmer's Library 1.1
Microsoft Corp.
16011 N.E. 36th Way
Box 97017
Redmond, WA
98073-9717
800/426-9400
LIST PRICE: $395
REQUIREMENTS: CD ROM drive and MS-DOS CD ROM extensions, 135K, DOS 3.1 or later version
TECHNICAL SUPPORT: unlimited free support for registered users, toll number, M–F 6–6
OTHER SUPPORT: none
Reader service no. 697

Moby Words
Illumind
380 N. Bayview Ave.
Sunnyvale, CA
94086-4324
408/732-9953
LIST PRICE: $59
REQUIREMENTS: DOS; hard drive recommended
Reader service no. 698

Industry Figures Tell the Story . . .

the Manhole Is a Breakthrough

"The first full- fledged interactive storybook available on a personal computer . . . a charming and engaging fantasy universe . . . proof that innovation in personal computing is alive and well."

– **Mitch Kapor,** founder of Lotus Development and chairman, ON TECHNOLOGY

"A provocative, idea-stimulating glimpse of a whole new genre . . ."

– **Stewart Alsop,** editor, *P.C. Letter*

"Clicking on anything . . . leads to a new adventure. Highly recommended."

– **Peter H. Lewis,** columnist, *New York Times*

Get **the Manhole** and see for yourself.

Cyan

The Software Publishers Association honored **the Manhole** as the **Best New Use of a Computer** in 1988.

ACTIVISION

See your retailer or call 1-800-227-6900 to order direct.

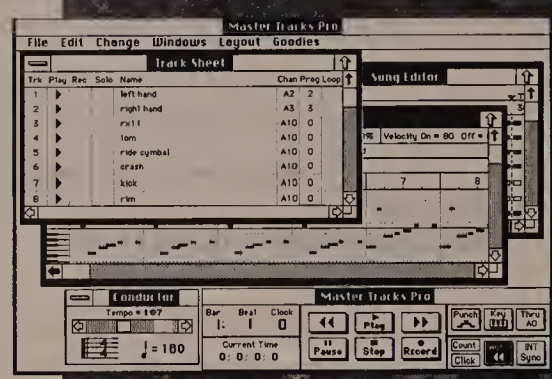
©1989 Activision. *the Manhole ©1988 Cyan.* MS-DOS version ©1989 Activision. *the Manhole* is a trademark of Activision. Distributed by MEDIAGENIC.

Circle 3 on reader service card

The world's most powerful MIDI sequencing software is available for IBM!

Master Tracks Pro™ for IBM features 64 tracks of real time and step recording, our exclusive Song Editor ™ and legendary graphic editing. Professional features include controller chasing, fit time, 32 MIDI channels,a built-in Sysex Librarian, a cue sheet for keeping track of hits and the ability to lock up to SMPTE via MIDI Time Code with the MIDI Transport.™

IBM Music Power!



For more information see a Passport dealer near you or call (415) 726-0280 for details on the Next Generation of Music Software™.

PASSPORT®

Passport, 625 Miramontes Street, Half Moon Bay, CA 94019 (415)726-0280

Circle 229 on reader service card

PREVENT COMPUTER THEFT!

Kablit ™ Security System

- Standard ***Kablit*** fasteners attach to equipment using existing screws. When cable passes through fasteners screws are concealed.
- Internal component security: ***Kablit*** fasteners secure rear panel of CPU preventing unauthorized removal of internal boards and hard drives.
- Now avalaible: new ***Kablit*** glue-on fastener to secure equipment that does not have existing screws.

Kablit works with:

• Computers	• Monitors	• Laptops	• Fax Machines
• Printers	• Keyboards	• Typewriters	• Copy Machines
• Disk Drives	•Laser Printers	• VCR's	• Audio Visual

Prices **$34.95*** to **$49.95*** depending on system. Quantity pricing available. Money back if returned In 30 days. Purchase orders accepted. Send for catalog.
*plus shipping

Secure-It, Inc. 18 Maple Court • E Longmeadow, MA 01028

1-800-451-7592, 1-413-525-7039 Dealer's Inquiries Invited.

Circle 31 on reader service card

```
USE MASTER
COPY TO TEMP FOR DELETED()
IF .NOT. FILE("OLDRECS.DBF")
   COPY STRUCTURE TO OLDRECS
ENDIF
USE OLDRECS
APPEND FROM TEMP
USE MASTER
PACK
USE
ERASE TEMP.DBF
```

LISTING 5: SAVEDELS.PRG transfers deleted dBASE records to OLDRECS.DBF for safekeeping.

TEMP.DBF, creates OLDRECS-.DBF (the first time), and appends marked records from the master file to that file. The program then packs the master file to delete the marked records and erases TEMP.DBF. To use SAVEDELS, change MASTER to your data base's file name, and type DO SAVEDELS at *dBASE*'s dot prompt.

Audrey Troyka
Merrick, New York

Improving WHEREIS

Jeff Richards's WHEREIS.BAT ["Seek and DOS Shall Find," *Star-Dot-Star, PCW,* July 1989] works well, but for DOS 3.3 users, there's an easier file search technique that supports wild cards and works with uppercase and lowercase file names:

```
echo off
cd\
echo Searching for %1...
attrib %1 /s | more
pause
```

This batch file, which I call SF.BAT, makes use of the ATTRIB command's /s parameter to hunt down files. The batch file's PAUSE command lets you read the results before returning

(continues)

NEW FOR 1989

386 SYSTEMS

MAXIMIZE PRODUCTIVITY

Here's how...

It's the future of personal computing. For power and speed, 386 PCs outclass all other machines.

For large spreadsheets and databases, the 386's dramatically faster performance is ideal. And for emerging applications like networking, desktop publishing, CAD, statistical analysis, expert systems and real-time animation, the 386 is *essential!*

You can expect to see an increasing number of programs that run efficiently *only* on a 386 system. To maximize the multitasking capabilities of OS/2, its tremendous processing power is a must.

But should you buy *now* — or *wait* for still further improvements? Which system is best — and what specific configuration suits your needs?

The choices are many — and potentially confusing. There are 16MHz, 20MHz and now 25MHz 386 machines. Huge differences in performance. Exaggerated promises by vendors. *Among the variables you must consider:* OS/2 capabilities, disk and memory caching, clock speeds, display adapters, real and protected modes, compatibility, expandability...and more.

New report has the answers.

Now there's a solution. *PC Digest's* authoritative, comprehensive report on 386 systems. It's just off the press. With concrete recommendations based on objective laboratory tests. Including OS/2 multitasking tests for the 386.

Our technicians evaluated each machine for ease of installation and handling, applications-based performance, features, documentation, and software incompatibilities.

In *PC Digest's* new 386 report, you'll find an in-depth tutorial covering 386 technology (including memory caching, memory architecture and numeric co-processors)...Detailed writeups on each machine...Performance test results... Complete specifications (including configurations, options, prices, support and warranties...And a Master Summary Chart that shows *at a glance* our ratings and recommendations for each PC tested.

From PC World's official research facility.

Nothing else can match the systematic comparative ratings of *PC Digest.* That's why, last year *PC World* chose NSTL as its official testing facility.

Like *Software Digest,* its well-known companion publication, *PC Digest* is fiercely independent and impartial. We accept no ads. We pull no punches.

Our performance tests are *applications-based.* We test machines with popular software like the major spreadsheet and database programs. In contrast, many magazine reviews use misleading "raw processing" benchmarks that bear little relation to real-world business tasks.

Not surprisingly, *PC Digest* has become the single most trusted resource for objective evaluations of PC hardware.

Special offer to qualified computer professionals.

PC Digest's 386 report normally sells for $40. But as part of a campaign to identify DP/MIS professionals and PC coordinators, we are offering it for just $20.

There are some reasonable conditions to this offer. To demonstrate that you qualify, *you must include your business card or letterhead* with the coupon below. If you phone in your order, the operator will ask for your company, title and department. At this low price, we cannot bill. Check or credit card are accepted. If you're dissatisfied for any reason, we'll refund your payment.

Expanding software applications and capabilities will push PC hardware to its maximum potential. 386 technology will revolutionize business computing. Are you prepared?

The base cost of a 386 system can range from $2,599 to $11,295. For just $20, this remarkable new report can help you decide *whether* to buy, *when* to buy, and how to choose the *right* system.

Circle 191 on reader service card

CREDIT CARD? CALL TOLL FREE:

☎ 1-800-223-7093

OR CLIP AND MAIL THIS COUPON

NSTL National Software Testing Laboratories, Box 1000, Plymouth Meeting, PA 19462

☐ **YES,** send me *PC Digest's* comprehensive report on 386 systems, regularly $40, at the special price of $20.

☐ Enclosed is a check for $20.

☐ Charge my: ☐ MasterCard ☐ Visa ☐ AmEx.

Card No. _____

Expiration Date _____

Signature X _____

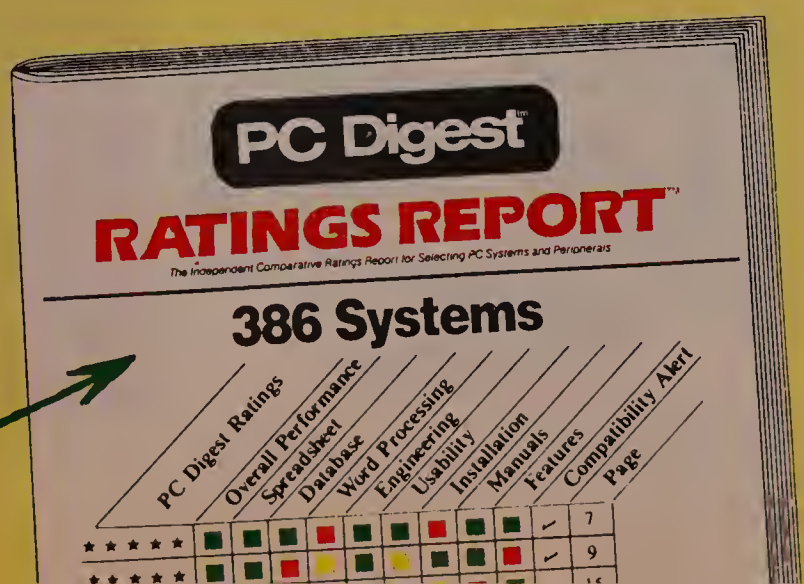
(No bill-me's, please)

PLEASE ATTACH YOUR BUSINESS CARD OR LETTERHEAD TO THIS COUPON.

(Note: This special offer will *not* be honored without proof that you are a computer professional.)

CH31M9

JUST PUBLISHED!
by NSTL *(National Software Testing Laboratories) — the official research facility of*
PC WORLD



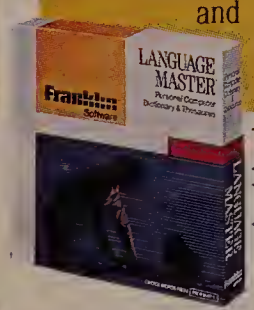
Definitions on disk

Language Master gives you instant access to more than 80,000 dictionary definitions plus 470,000 synonyms from Merriam-Webster—the English language authority.

The dictionary contains definitions, usage notes and hyphenation points. The thesaurus contains synonyms, meanings for each synonym group and properly inflects all responses.

Language Master, formerly Choice Words for the IBM PC, works with most popular MS-DOS word processors and is now available for the Apple Macintosh.

Whether you're writing, reading, or simply want to explore the English language in a new and exciting way, Language Master is for you.



LANGUAGE MASTER™

$99

See your local software dealer. Or order directly by calling 1-800-323-0023, (305 566-3511 in FL) or write: Franklin Software, 3511 N.E. 22nd Avenue, Fort Lauderdale, FL 33308

Franklin™ Software

Circle 233 on reader service card

to another program—for example, when executing SF from inside a *Microsoft Word* macro.

John East
Oxnard, California

*Editor's note: ATTRIB was never intended to search for files this way, but it works great! Enter commands such as SF LOAN.WKS and SF *.PAS, and if SF.BAT finds the specified files, ATTRIB will display their full path names.*

Tom Swan is the author of Mastering Turbo Pascal 5.5 *(Howard W. Sams, Indianapolis, Indiana, 1989).*

Share your tips and discoveries with PC World *readers; see How to Contact PC World, page 4.* ●

Chuck's POS increased productivity four-fold at Balboa Office Supply,

PC World reported, "The Good News - Affordable point-of-sale (POS) systems are revolutionizing Main Street America. Retailers are tracking their inventory as they ring up sales, and the dramatically improved flow of information has helped businesses multiply in size."

"Balboa Office Supply with a 32,000 item inventory, was looking for a POS system that was as fast and easy to use as possible. Chuck Atkinson Programs delivered."

"Chuck's POS automatically captures and records transactions as they happen. Once this information is stored, you can pull reports that let you manage as deftly as the huge chain stores. You gain better control and get information never before available."
The result is quicker growth, increased profits, fewer hassles, and a competitive edge.
You can have up to 31 stations on DOS computers. Money-back guarantee, since 1978. English & Spanish versions available thru qualified dealers world-wide.

Chuck Atkinson Programs
1-800-826-5009 FAX (817) 560-8249
3737 Ramona Fort Worth, Texas 76116-7007

Circle 27 on reader service card

POWER TIP NO. 75

Passwords for Professional Write

You can protect confidential *Professional Write 2.0* files with passwords. When you're ready to save a document, press <Ctrl>-S, enter a file name in the dialog box, press <Tab> twice, press E, and press <Enter>. *Professional Write* will display a dialog box and prompt you for a password. From now on, every time you access this file the program will prompt you for the password, so don't forget it.

Wendy Grubow
Senior Communications Specialist
Software Publishing Corporation

FREE ABC Monday Night Football Interactive Demo Disk with exclusive bonus plays.
See specially marked 10 packs of Sony® Floppy Disks.

"Now that you're in the executive suite, Dodds, you'll have a company car, an unlimited expense account and Sony diskettes."

When you think about it, it's only fitting that leaders of industry insist on the leader in magnetic media: Sony.

Ever since the introduction of the first tape recorder in Japan, Sony has been perfecting high-density magnetic media.

That's why today Sony is a world leader in audio, video and computer magnetic storage media.

We even invented the format for the 3.5" disk drive and floppy that are rapidly becoming the world standard.

So, naturally, we had quite a head start when the others finally decided on playing follow the leader.

And the same engineering and technology we applied to create the finest magnetic media for our 3.5" floppies was applied to all of our magnetic computer media. So our 5.25" floppies are remarkably reliable, too.

That's why people who absolutely can't afford to lose their data insist on Sony.

But for those at the top, insisting on Sony disks isn't just a sign of high standards, it's also a sign that you've arrived.

SONY®

© 1989 Sony Corporation of America.

NINE REASONS TO BUY CLIPPER WITHOUT A MOMENT'S HESITATION!

The Clipper language offers two compelling reasons to adopt it as your application development standard: open architecture and .EXE file generation. Clipper 5.0 boasts even more. We think you'll be convinced before you reach number nine.

1 Open Architecture.

Clipper is both powerful and easy to use, with the most comprehensive command and function set available. Want more? Extend the Clipper language with user-defined functions written in Clipper, Assembler, C and other languages.

2 User-defined Commands.

Even more extensibility is available in Clipper 5.0. Support for user-defined commands allows you to tailor your command set to a specific business or industry.

3 .EXE File Generation and LAN Support.

Clipper's compiler yields stand-alone .EXE files for unrestricted distribution, requiring no LAN-PACKs™, no run-time modules and no licenses of any kind!

4 Break the 640K DOS Limit!

Improved memory management in Clipper 5.0, made possible by an exclusive version of Pocket Soft's .RTLink™, lets you run applications larger than 640K, without overlays!

5 It's Faster.

Clipper dramatically reduces development time, but accelerates program execution and large network performance beyond any system you're using now!

Clipper 5.0

GET IT FIRST, GET IT FREE!

6 Use What You Already Know.

Integrate existing routines from C, Assembler, Fortran, Pascal or dBASE®. They're all more powerful with Clipper!

7 New, More Powerful Features.

Clipper 5.0 introduces new variable types, user-modifiable GETs and multi-dimensional arrays that can contain arrays!

8 New Documentation, Including an On-line Guide.

New and expanded documentation will make you immediately productive in Clipper 5.0. And you can access it all on-line through the included Guide to Clipper™ and Norton Guides™ Engine .

9 You Can Get It First!

Buy the current version of Clipper after June 1, 1989, register your copy, and be among the first to get Clipper 5.0—*Free!* You'll even save $100 off the suggested retail price of Clipper 5.0.

So, don't hesitate! Give us a call for the name of your nearest authorized dealer, and make your commitment to Clipper, today.

Clipper®

The Application Development Standard

213/390-7923

Nantucket®

Nantucket Corporation, 12555 West Jefferson Boulevard, Los Angeles, CA 90066. 213/390-7923 FAX: 213/397-5469 TELEX: 650-2574125. Nantucket, the Nantucket logo and Clipper are registered trademarks of Nantucket Corporation. Other brand and product names are used for identification purposes only and may be trademarks or registered trademarks of their respective holders. Entire contents copyright © 1989 Nantucket Corporation.

Circle 193 on reader service card

Go With the Original and Get a FREE DISK

THROWN IN With Our Compliments

Peel off PC WORLD's PowerBase*•* disk sticker and place on square to instantly qualify. You also save 33% off the regular subscription rate.

Move the disk to the right to take maximum advantage of your WordPerfect, Wordstar, Lotus 1–2–3, DOS, dBase III, Paradox, Turbo Pascal, Turbo C, or Basic software.

PowerBase *•* diskette is offered solely by PC World Magazine. It should not be confused with 'power–base' which is relational database software offered by Compuware Corporation.

POWER

Send me one year of PC WORLD, filled with powerful How To tips and techniques, and send me your FREE PowerBase *•* disk with 35 utilities. I'll pay the low 12–issue rate of just $19.97–33% off the regular subscription rate.

Put Disk Here To Receive FREE Utilities

4CV96

Name _____

Company _____

Address _____

City / State / Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S.

PC WORLD

PERFORMANCE

Put me down for one year of PC WORLD's high–performance product reviews, and send me your FREE PowerBase*•* disk with 35 utilities. I'll pay the low 12–issue rate of just $19.97–33% off the regular subscription rate.

4CV96

Name _____

Company _____

Address _____

City / State / Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S.

Put Disk Here To Receive FREE Utilities

PC WORLD

PRECISION

I want one year of PC WORLD's precise analysis of hot new hardware, software, peripherals, add–ons, and upgrades. And send me your FREE PowerBase *•* disk with 35 utilities. I'll pay the low 12–issue rate of just $19.97–33% off the regular subscription rate.

4CV96

Name _____

Company _____

Address _____

City / State / Zip _____

Please allow 6 to 8 weeks for delivery of your first issue. Offer good only in the U.S.

SEE BACK FOR DETAILS

Put Disk Here To Receive FREE Utilities

PC WORLD

Attention:
Recipient is entitled to
35 FREE utilities plus
33% off
the regular
subscription rate.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

Attention:
Recipient is entitled to
35 FREE utilities plus
33% off
the regular
subscription rate.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

Attention:
Recipient is entitled to
35 FREE utilities plus
33% off
the regular
subscription rate.

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD
Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833

35 FREE TIPS AND UTILITIES FROM PC WORLD

There are hundreds of utilities you can use to boost your PC's performance. Now 35 of the hottest utility ideas are yours on one disk– with PC WORLD's PowerBase *•*.

YOU RECEIVE POWERBASE *•* FREE WHEN YOU SUBSCRIBE TO PC WORLD.

Mail a reply card today to start tapping into 35 of PC WORLD's best utilities–free of charge–with PowerBase *•*. You get time–saving tricks for:

- WordPerfect—Save time by printing envelopes right from a letter file
- Wordstar—Use quick macros for addresses and data entry
- Turbo Pascal —Add windows for split–screen viewing
- dBase III—Center text in one keystroke and create merge documents for WordPerfect
- Lotus 1–2–3—Total columns with one key stroke or create menus
- Paradox—Optimize file storage
- Basic–Create statements faster
- DOS—Print screens with automatic form feed
- Batch Files—Format disks faster by using both disk drives
- Plus 23 more time–saving utilities!

Receive all 35 utilities FREE and save 33% off the regular subscription price when you mail one of the attached order cards. Mail one today!

NETWORK Q&A

Tips and strategies for departmental networking

Downloading fonts across the LAN with WordPerfect, speeding up your server with extra memory, getting around workstation RAM limitations, installing remote printers on a server-based LAN, and choosing the right disk-caching system for your net.

David Ferris

Q. *We have a seven-node Novell* NetWare *LAN. Can we use the single-user version of* WordPerfect 5.0 *to download soft fonts to our network LaserJet?*

Kevin Shannon
Huntsville, Alabama

A. You're in luck—*WordPerfect 5.0* is fairly well behaved on a LAN. To redirect output from your printer port to the network spooler, you'll need to issue a *NetWare* Capture command from the command line (or a batch file) before loading *WordPerfect*.

Once you have redirected the printer output, you can employ the same *WordPerfect* commands you'd use to download fonts to a local LaserJet. Keep fonts to a minimum so you don't use printer memory. Mark seldom-used fonts with a plus sign so they'll be cleared from memory after printing.

Q. *We are running* NetWare 286 *on a first generation (16-MHz) Compaq 386 server. How can we make workstation applications run faster? Specifically, how critical is it to have a lot of memory and an 80387 math coprocessor in the server?*

T. J. Miyoshi
Denver, Colorado

A. Speeding up network performance is complicated. While you can't do anything to your server to affect how fast applications *run* on your workstations, you can definitely speed up server disk I/O and network traffic.

It is important to have plenty of memory in your server; *NetWare* uses it to set up disk buffers, which can speed up reads and writes on the server disk significantly. Three to four megabytes of server RAM should be sufficient for a 300MB hard disk. If you have a gigantic hard disk, you might need as much as 8MB.

Adding an 80387 will not improve performance; today's network operating systems do not use floating-point arithmetic. In the future, as server-based applications like SQL data bases become more common, floating-point arithmetic will probably play a larger part, but until then you can forget about installing this chip in your servers.

One excellent and relatively inexpensive way to speed up LAN performance (regardless of topology) is to install two network boards in your server. You don't need complicated bridging hardware or software; simply connect the boards in series using your standard network cabling. When the server is heavily loaded, this can cut the time it takes to service a disk request from a workstation by 30 to 40 percent.

Q. *I'm running* NetWare *on an AT-compatible file server with 1MB of memory and 2MB of expanded memory, and I have set up my CONFIG.SYS to run* Windows' *disk-caching program, SmartDrive. I want to run* PageMaker 3.0, *which has* Windows *built in. But when I try to load it, a message comes up saying there isn't enough memory. What should I do?*

Frank Schmidt
Frankfort, Kentucky

A. You're running into a classic case of RAM cram. Typically, with DOS, *NetWare*, NETBIOS, assorted device drivers, and a

(continues)

BLACKSHIP
Your "BEST BUY" Company

386 SYSTEM

"Blackship 386/25: Reliability at a Good Price . . . the only machine tested that was entirely trouble-free."
— PC WORLD, August 1989

"The Blackship offers low price 33-MHz performance . . . we rate it a very good value."
— INFOWORLD, July 1989

"Blackship's 386/25 is low price leader."
— INFOWORLD, May 1989

". . . one of the 80386-based clones that offer a revolutionary new feature — affordability."
— BYTE, October 1988

". . . remarkably strong performance at bargain prices."
— PC WORLD, June 1988

386/33 Mhz System $3395
386/25 MHz System $2595
386/20 MHz System $1795
386/16 MHz System $1595

286 SYSTEM

"Well-built newcomer is value leader among superfast ATs we tested."
— INFOWORLD, February 1989

". . . its price/performance ratio easily justifies PC WORLD's Best Buy recommendation."
— PC WORLD, August 1988

286/25 MHz System $1295
286/20 MHz System $1195
286/16 MHz System $1095
286/12 MHz System $945
286/10 MHz System $895

ALL SYSTEMS INCLUDE

- 1 Mb Memory
- 2 Serial, 1 Parallel, and 1 Game Port
- 2 FD / 2 HD Controller
- 1.2 Mb 5¼" Floppy Drive
- Keytronic 101-Key Keyboard
- 8 Expansion Slots
- Math Coprocessor Socket
- Clock/Calendar with Battery Backup
- Room for Up to 5 Half-Height Drives
- 220 Watt Power Supply

OPTIONS

• Memory • Hard Drives • Tape Backup
• Video • Modems • Digitizers • Printers
• Plotters • More . . . CALL

ORDERS

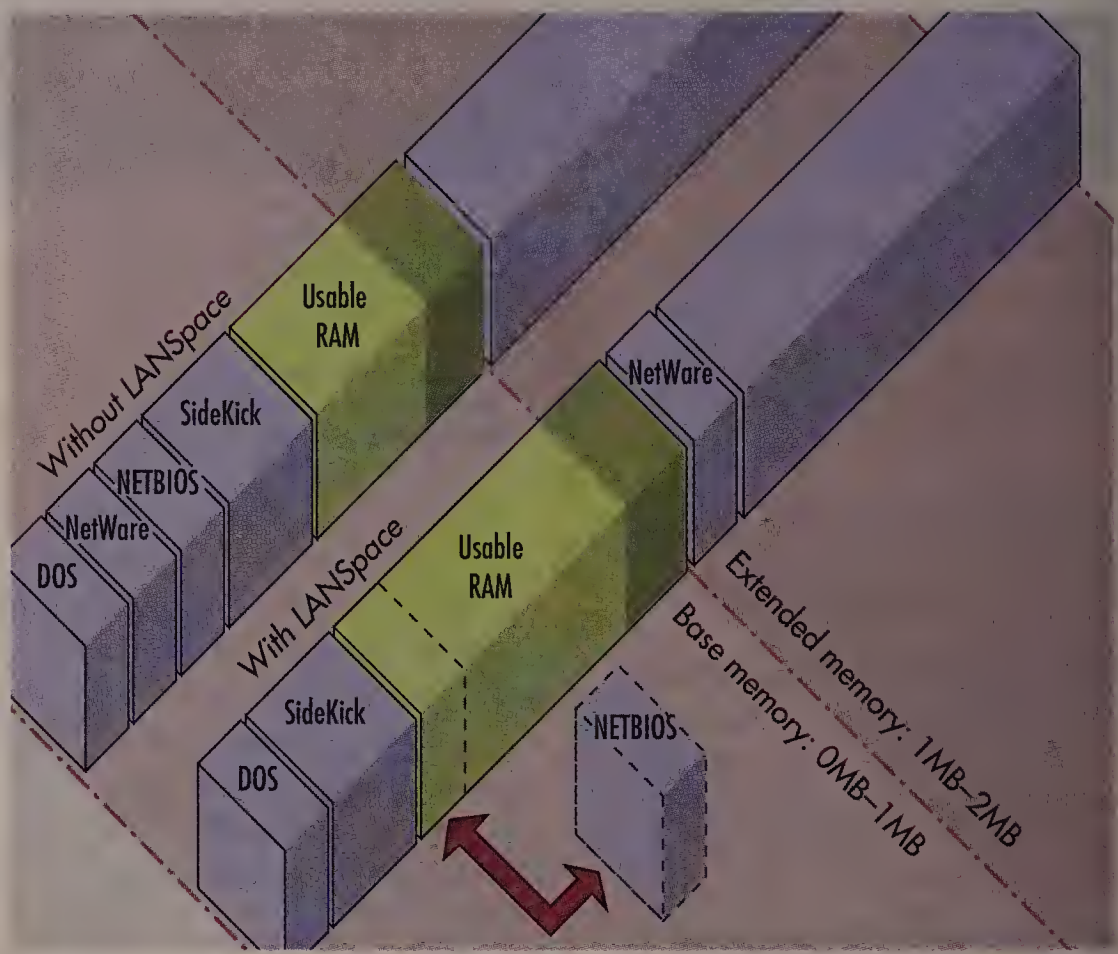
1-800 431-6249 (USA)
1-800 654-7955 (CA)

BLACKSHIP
COMPUTER SYSTEMS, INC.

4031 Clipper Court
Fremont, CA 94538
415-770-9300
FAX 415-770-8674

PC WORLD BEST BUY

Circle 1 on reader service card



LANSpace puts Novell's NetWare shell into extended memory and allows you to swap NETBIOS in and out as needed.

TSR loaded, you can end up with only 520K of usable workstation memory. *PageMaker* needs a minimum of 550K.

Until network software takes better advantage of operating systems like OS/2 that can access more than 640K of RAM, there are only two solutions to your problem. The simplest is to log off the network and reboot (using a different set of AUTOEXEC.BAT and CONFIG.SYS files that load a minimum of RAM-hungry TSRs) before running *PageMaker*. You'll be disconnected from the network printer, so you'll need to connect a printer to your PC. After your *PageMaker* session is finished, you can reboot with your normal AUTOEXEC.BAT and CONFIG.SYS.

Another choice is to try an excellent new utility called *LANSpace* that provides two memory-saving options: It moves the *NetWare* shell into extended memory, and it lets you load and unload NETBIOS without rebooting. This can give you up to 56K of additional RAM.

Q. *We run* NetWare *on a thinwire Ethernet LAN with a centrally located file server. Users in remote sections of the building can access the LAN via a repeater, but they have to walk a long way to get printouts from the network printer, which is attached to the server. Is there any way to provide a remote printer for them that will attach directly to the network cable without a PC?*

Kraig Patterson
Salt Lake City, Utah

A. If you are running *NetWare 2.15*, which supports AppleTalk, you can connect an Apple LaserWriter directly to your network

(continues)

"Is there something we missed?"

Is there anything missing in the ACCEL-500 24-pin dot matrix printer?

Not performance. The ACCEL-500 can zoom through drafts at 480 cps. Print charts and graphs in dazzling color. And combine letter quality with high resolution color graphics.

Not versatility. The ACCEL-500 is compatible with most popular printers. So it's equally at home on Macintosh® and IBM®-compatible PCs. There's a paper-handling option for every office application, too.

Not convenience. The ACCEL-500's innovative Select-Dial™ makes paper handling a snap. And plug-in Intelli-Cards™ add fonts and printer emulations instantly.

Not reliability. The ACCEL-500 is a 'round-the-clock workhorse that takes even the most demanding workload in stride.

And certainly not value. The ACCEL-500 is priced below leading printer brands that offer far less capability.

In fact, it seems that the only thing missing from the ACCEL-500 is you.

ACCEL-500™

Advanced Matrix Technology
765 Flynn Road, Camarillo, CA 93010
(800) 992-2264 (805) 388-5799

ACCEL-500, Select-Dial and Intelli-Card are trademarks of Advanced Matrix Technology, Inc. Macintosh is a trademark of Apple Computer, Inc. IBM is a registered trademark of International Business Machines Corporation. Drawing courtesy of Wingz.

Circle 5 on reader service card

via a LocalTalk cable; *NetWare* can then send output to the LaserWriter.

Otherwise, your best bet is to turn an inexpensive PC into a remote print server via products such as *PS-Print* and *LANSpool* (see *Network Q&A, PCW,* October 1989). Take your oldest, slowest PC, place it close to your remote users, install a network board, and plug the PC into the network. Now you can simply connect a printer to the new server and run *PS-Print* or *LANSpool.* Your remoter users will need to run the TSR component of these programs on their workstations, but their printing problems will be solved.

Q. *I have read that Novell* NetWare *is "hardware independent." How does this statement apply to disk caching? In particular, if a system has an Intel 82385 cache controller, will it be used by* NetWare? *Is there any particular cache system (hardware or software) that performs particularly well with* NetWare?

Jack Goodell
Talent, Oregon

A. You are referring to two different types of caching: memory caching and disk caching. Both stash data, but otherwise they serve different purposes.

A *memory cache* is a special section of high-speed memory that sits between the CPU and the system RAM. The CPU can access instructions and data in the cache much faster than from regular RAM. The Intel 82385 cache controller sets up and manages this memory cache; *NetWare* doesn't know anything about it and doesn't need to. In this sense, it is "independent" of the 82385 cache controller.

Disk caching is another story. The disk cache sits between the hard disk and system memory. The CPU can access data in the cache much faster than it can read it from disk. Disk-caching software tries to anticipate what disk-based information will be needed next and place it in RAM before the CPU needs it.

Disk caching is especially important on a network, where multiple users make simultaneous disk requests. *NetWare* sets up its own disk cache; the more memory your server has, the more *NetWare* devotes to disk caching. For instance, although 3MB or 4MB of RAM is recommended for a *NetWare* server, *NetWare* code requires only

(continues)

NEW! Version 2.0

More LaserJet Fonts

272 Scalable Fonts for HP LaserJet+, II & compatible printers.

Digi-duit!™ 2.0 lets you make high quality fonts any size, 3.0-720 pts, plus slant, expand, rotate, flop, and reverse. Fill patterns, multiple symbol sets, portrait and landscape fonts, with full or partial character sets.

Quick and easy to use!
Use DIGI-FONTS with all programs which support soft fonts, including Ventura, WordPerfect, PageMaker, MicroSoft Word, & WordStar.

Than Anybody!

Digi-duit!™ 2.0 — $89.95 + $3 ship
Includes 8 DIGI-FONTS, Typeface catalog

Complete Set — $489.90 + $6 ship
Digi-duit!™ 2.0 + 272 DIGI-FONTS

Order Today!
(800) 242-5665

DIGI-FONTS, INC.
528 Commons Drive
Golden, CO 80401
(303) 526-9435
FAX (303) 526-9502

This ad set entirely with DIGI-FONTS Typefaces. VISA, MC, AMEX, COD

Circle 304 on reader service card

Protects while you type!

- Remains in Place while you use your computer.
- Avoids Costly Repairs. Protects delicate electronics from dust, spills, smoke, ashes, staples.
- Soft, Flexible, retains normal keyboard feel.
- Washable, Durable High-Tech Polymer lasts years.
- Hundreds of Models. SafeSkin is available for most PCs, laptops, workstations and clone keyboards.
- Office • Home • Factory • Classroom • Laboratory

List Price $29.95. Please call or write for free color brochure. Dealer inquiries encouraged.

SafeSkin™
KEYBOARD PROTECTOR

Merritt Computer Products, Inc. 5565 Red Bird Center Drive
Suite 150, Dallas, Texas 75234/(214) 339-0753 • FAX (214) 339-1313
In Canada call 1-800-663-1061

Circle 217 on reader service card

The LASER 286/2 races through tasks at 6 or 12 MHz. Thirteen feature-packed configurations mean there's a 286/2 for every business or home use.

The LASER Turbo XT is switchable from 4.77 to 10 MHz. All nine configurations offer an impressive array of built-in features.

Some Computers Don't Come With Much. Ours Come Loaded.

A lot of so-called "affordable" computers aren't so affordable once you start adding everything they've left out. Things like hard and floppy disk drives, parallel and serial ports, graphics adapters–even MS-DOS®.

But the LASER 286/2™ and Turbo XT™ are affordable in their most fully loaded configurations. And come with extras you won't find on other computers.

Like a free copy of PC Tools™ Deluxe–a $129 value.

Our LASER 286/2 shows how feature-packed our computers are. Even the most basic configurations include 640K RAM (expandable to 1 MB), a 5-1/4" 1.2MB floppy drive, eight full-size expansion slots, a rugged metal case, a 102-key keyboard, MS-DOS, a tutorial system for the first time user, and all the ports you need for a printer, modem and mouse.

Our computers are more than loaded, though. They're priced remarkably less than other computers. And are carried by selected department stores and computer shops nationwide. Complete with a one-year warranty and, of course, PC Tools Deluxe, the world's best-selling utilities software.

For your nearest dealer, call 312/540-8911 (in Canada, 800/387-9672). Or write Laser Computer, Inc., 800 N. Church St., Lake Zurich, IL 60047-1596.

And get a fully loaded computer you don't have to be loaded to buy.

Just smart.

LASER

Laser Computer, Inc./A Video Technology Company

LASER Computer, LASER 286/2 and LASER Turbo XT are trademarks of Laser Computer, Inc. PC Tools is a trademark of Central Point Software. MS-DOS is a registered trademark of Microsoft Corporation.

Circle 150 on reader service card

about 500K of that; the rest is used for disk caching.

A number of third-party disk subsystems employ their own caching, so you may end up running several disk-caching schemes on top of one another. Since Novell goes to great lengths to "train" disk manufacturers about how its caching works, conflicts are rare—and in this sense, *NetWare*'s disk caching is hardware independent. Nonetheless, make sure any disk subsystem you buy is Novell "certified," or at least designed to work with *NetWare*.

David Ferris is the president of Ferris Networks, a San Francisco-based PC dealer specializing in networks.

Trouble on your LAN? Looking for new networking products? Send us your questions. For every question published, you'll receive $25 and a solution to your problem. To send correspondence, please see How to Contact PC World, page 4. ●

WHERE TO BUY

LANSpace
LAN Systems
599 Broadway
New York, NY 10012
800/827-5267, 212/431-1255
LIST PRICE: $495 per server
Reader service no. 660

LANSpool 1.57
LAN Systems
LIST PRICE: $395 per server
Reader service no. 661

PS-Print 2.40
Brightwork Development
P.O. Box 8728
Red Bank, NJ 07701
800/552-9876, 201/530-0440
LIST PRICE: $595 per server, NetWare ELS 2 version $295 per server
Reader service no. 662

POWER TIP NO. 76

Sizing Smartcom's Peruse Buffer

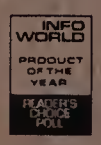
Smartcom III's 20K Peruse buffer offers a quick way to store information from an on-line session. If you want to alter the buffer's default capacity, you can change the size from the Activity Settings menu. Press <F2> to display the main menu, select Activity Settings, press M, enter an activity, and select Major Settings. Now select Buffer size and type in the new value.

Toru Tanaka
Los Angeles, California

It takes a great performance for a disk to become a legend. Chuck Berry has what it takes. And so does PROCOMM PLUS. It gives you power and ease of use that surpasses communications software costing $250 or more. Yet PROCOMM PLUS costs much, much less. Which simply means when you want communications software that gives you a great performance, you can still *be good* to your wallet.

LEGENDARY DISKS

Ask your software dealer today about PROCOMM PLUS, now available in stand-alone and local area network versions.



DATASTORM
DATASTORM TECHNOLOGIES, INC.
P.O. Box 1471 • Columbia, MO 65205
314.443.3282

Circle 279 on reader service card

LAN Operating Systems

Which one is right for your organization... and which could cause you serious problems?

Today, business after business is upgrading to a network environment, and is faced with many difficult and complex choices. So complex, that they challenge even the experts.

To maximize productivity and avoid costly delays, several departments and individuals need to share the same resources. This includes simultaneous access to critical data and the ability to run multiple functions concurrently.

But the options are still potentially confusing. How many users will the network support? How quickly can transactions be processed? How easily can it be installed? Is the documentation decipherable? What topologies and network adapters are supported?

Now there's a way to know - quickly & easily

The answers are in one place: *Software Digest's* authoritative report on LAN Operating Systems. It's just off the press. *With concrete recommendations based on objective laboratory tests of eight operating systems, including: Vines/386, DataLAN, SFT Netware, 3 + Share, Tapestry II, IBM LAN Server, 10NetPlus, and 3 + Open.*

Our technical staff evaluated each program for ease of learning, ease of use, performance, versatility, and error handling. We put each system through a *series of grueling real-life exercises* measuring important elements such as installation, documentation, and security administration.

In *Software Digest's* new LAN Operating Systems report, you'll also find an *in-depth tutorial* covering all aspects of network technology (including system configuration, connectivity, and performance monitoring)...*comprehensive two-page analysis* on each system, giving you detailed ratings, strengths and limitations, specifications, and prices...*22 performance results...210 verified versatility items*...and the *Master Ratings Chart* comparing all the programs at a glance, and rating each system from best to worst.

The single most trusted software evaluation service

Nothing else can match the systematic method of comparative ratings pioneered by Software Digest. Published by National Software Testing Laboratories, it's been hailed as "The *Consumer Reports*" of software. Instead of the usual product "reviews", we perform *rigorous, scientifically controlled benchmark* tests — using realistic business tasks.

We're fiercely independent and impartial. We pull no punches. We refuse any offer that could compromise our editorial integrity.

Not surprisingly, *Software Digest is the single most trusted resource* for evaluations of IBM-compatible PC business software.

EXCLUSIVE REPORT from **NSTL** (National Software Testing Laboratories) — the official research facility of **PC WORLD**.

Special offer to qualified computer professionals

Software Digest's report covering eight LAN Operating Systems normally sells for $50. But as part of a campaign to identify DP/MIS professionals and PC coordinators, we are offering it for just $25.

There are some reasonable conditions to this offer. To demonstrate that you qualify, *you must include your business card or letterhead with the coupon below.* If you phone in your order, the operator will ask for your company, title, and department. At this low price, we cannot bill. Check or credit card are accepted. If you're dissatisfied for any reason, we'll refund your payment.

LAN technology will maximize productivity throughout your business. Can you afford to ignore it? Here is the *best, fastest, and easiest* way to get on top of this emerging technology, and make the *right* decisions with confidence.

Circle 196 on reader service card

CREDIT CARD? CALL TOLL FREE:

1-800-223-7093

OR CLIP AND MAIL THIS COUPON

NSTL
National Software Testing Laboratories
Plymouth Corporate Center,
Box 1000
Plymouth Meeting, PA 19462

☐ **YES,** send me *Software Digest's* comprehensive report on LAN Operating Systems, regularly $50 at the special price of $25.

☐ Enclosed is a check for $25.

☐ Charge my: ☐ MasterCard ☐ Visa ☐ AmEx.

Card No. _____

Expiration Date _____

Signature X _____
(No bill-me's please)

PLEASE ATTACH YOUR BUSINESS CARD OR LETTERHEAD TO THIS COUPON.

(Note: This special offer *will not* be honored without proof that you are a computer professional.)

CH81H9

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE

- Accessory Boards — page 261
- Communications/Modems — page 261
- CD ROM — page 261
- Computers/Systems — page 262
- Disk Drives — page 263
- Memory Chips — page 263
- Peripherals — page 263
- Plotters — page 264
- Power Supplies — page 264
- Security — page 264
- Tape Back-Ups — page 265

MISCELLANEOUS

- Accessories — page 265
- Bar Coding — page 265
- Business Opportunities — page 266
- Catalogs — page 266
- Computer Insurance — page 267
- Data/Disk Conversion — page 267
- Disk Copy Service — page 267
- Disks — page 267
- Networking — page 267
- Supplies — page 268

SOFTWARE

- Accounting — page 268
- Artificial Intelligence — page 269
- Business Applications — page 269
- Church Applications — page 270
- Clip Art — page 271
- Communications — page 271
- Construction — page 271
- Data Entry — page 271
- Desktop Portraits — page 272
- Desktop Publishing — page 272
- Educational — page 272
- Engineering — page 272
- Entertainment/Games — page 273
- Financial — page 274
- Flow Charting — page 274
- Genealogy — page 274
- Graphics — page 275
- Health — page 275
- Inventory Control/Management — page 275
- Languages — page 275
- Laser Fonts — page 275
- Mailing List Programs — page 276
- Maintenance Management — page 276
- Manufacturing — page 276
- Medical — page 276
- Messaging — page 276
- Music — page 276
- Project Management — page 277
- Public Domain/Shareware — page 277
- Real Estate — page 278
- Scheduling — page 278
- Security — page 278
- Sports — page 278
- Statistics — page 279
- Surveys — page 279
- Taxes — page 279
- Time Management — page 280
- Training — page 280
- Utilities — page 280
- Word Processing — page 280

ADVERTISING SALES STAFF

Sharon Van Leuven
Catalog Manager

Sandie Wade
Western U.S.

Greg Messina
Eastern U.S.

Place Your Ad Today!
Call 800.435.7766
In CA: 800.435.7760

ADVERTISING RATES & INFORMATION

The *PC World Catalog* serves as a cost-effective monthly meeting place for advertisers and volume purchasers. *Our readers don't want to shop, they want to buy!* And your message can reach them in two formats—display or text. Both are arranged by product category for easy reference.

Display ads are sold by the column-inch (2-inch minimum). You must supply camera-ready type and artwork. Standard red is available as a second color.

Text ads are sold at a minimum three-time rate of $430 per issue for a total of $1,290. You supply copy. We set type.

For further information regarding the *Catalog*, space closings and material deadlines, please call Toll-Free 800/435-7766. Within California, call 800/435-7760.

PC World
501 Second Street
San Francisco, CA 94107

PcW PCW Communications, Inc.
An IDG Communications Publication

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE/Accessory Boards

PREVENT HARD DISK FAILURES!

HDS100 HARD DISK SAVER™ is a ½ card capable of turning on and off the hard disk under software control while maintaining continuous use of the computer.

- 50% noise reduction
- Reduced risk of hard disk failure
- 30 day money back guarantee / 1 yr. warranty

$109
Plus $6 S & H.
CA res. add applicable sales tax.
Made in U.S.A.

- Your RAM resident programs accessible at all times
- Screen saver/Head parking
- Fax/modem cards operable 24 hours

GANDER TEKNICAL
P.O. BOX 1496 • Union City • CA 94587
(415) 471-3849

CIRCLE 454 ON READER SERVICE CARD

PC MAGAZINE EDITOR'S CHOICE

MULTI-LINE VOICE MAIL

Perfect Solution For Managing Your Voice Communications

- Voice Mail System
- Call Processing
- Telemarketing
- Order Processing
- Call Distribution
- Programmers Tool Kit

Complete Systems
BIGMOUTH $295
Starting at..... PLUS 6 S/H
(415) 652-9600
Booth #H8739 at Comdex
TALKING TECHNOLOGY, INC. TTI
4383 PIEDMONT AVE., OAKLAND, CA 94611

CIRCLE 521 ON READER SERVICE CARD

NEW PRODUCT

"VIDEO MULTIPLEXER"

Connect 3 Monitors
To Your Existing Videoboard

- IBM Compatible (PC/AT/XT)
- Supports MGA/CGA/EGA
- One Year Warranty

$79.95 + $4 (P&H) - (C.O.D. add **$2.95**)
Dealers Welcome - CA Res. add sales tax
BY DESIGN
P.O. Box 10001, Canoga Park, CA 91309
(818) 349-3185

CIRCLE 599 ON READER SERVICE CARD

REACH 2.1 MILLION BUYERS. ADVERTISE IN *The PC World Catalog.*
CALL 800-435-7766
In CA: 800-435-7760

CATALOG PC WORLD

CD-ROM

CD-ROM

BUREAU OF ELECTRONIC PUBLISHING

Microsoft CD-ROM Special

Microsoft Stat Pack & Small Business Consultant for only $100 ($275 value) with purchase of Bookshelf

Complete CD-ROM drive kit with Microsoft Bookshelf ($265)	$895
Complete drive kit with Bookshelf & Programmers Library ($379)	1189

CD-ROM Drives

Amdek or Hitachi Drive w/ audio	699
NEC CDR-77 w/ audio PC ($849) or Mac	825
Toshiba w/ audio for PC & Mac, from	850
PC Starter set drive and 2 titles	799

CD-ROM Titles

McGraw-Hill Ref. set 100,000 terms	245
Grolier's Encyclopedia 20 vol. PC & Mac	345
Between Heaven & Hell practical/perverse	99

MORE! Over 100 different titles

FREE subscription to *CD-ROM End User* with every order! and FREE CD-ROM Sourcedisk with every order over $1,000!
MasterCard, Visa, American Express & COD accepted
Money back guarantee
Free technical support

Bureau of Electronic Publishing, Inc.
P.O. Box 779, Dept A, Upper Montclair, NJ 07043
Fax # 201-857-3031
The Source for CD-ROM
(201) 857-4300

CIRCLE 540 ON READER SERVICE CARD

Communications/ Modems

CompFax Puts Efficiency at Your Fingertips

Consider the benefits of buying your unit from CompFax:
• the most competitive prices • a full line of FAX machines to fit individual needs • expert technical service and support • fast delivery • flexible credit terms • service contracts • price protection warranty

CompFax puts it all at your fingertips!

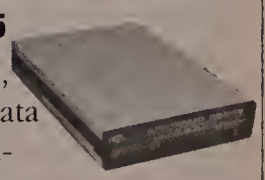
CompFax
-800-243-7775
Call Today!
Dealer inquiries welcome

List: $1595.00 | **Sharp FO-300** **$1049.00**/List $1995.00 | **Sharp FO-330** **$1149.00**/List $1795.00

CIRCLE 588 ON READER SERVICE CARD

Fax of America
Buy Sharp, Murata, Xerox, Ricoh & Canon Fax Machines at the lowest prices in the country! Same day shipping, all major credit cards accepted. Full in-house service & manufacturers' warranty. Customers in 50 states. Call FAX OF AMERICA today for the lowest prices on Fax anywhere.
Fax of America
PO Box 1032
South Bend, IN 46624
1-800/342-3299

9600 bps V.32 Modem
MNP Class 5



High speed, error free data communications without proprietary protocols. Effective throughputs up to 19.2 Kbps.

- Speeds from 300 to 9600, full duplex, V.32.
- Two-wired dial up.
- Extended AT command set.
- Cable & software included.
- $799

Order 800-547-3303
Computer Friends 14250 NW Science Park Dr.
Portland OR 97229 (503) 626-2291

CIRCLE 556 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Invisible Network.

Expanded Memory Support. Invisible Network is the only LAN that supports expanded memory. On computers equipped with expanded memory version 4.0, your DOS memory overhead can be as little as 3K for a workstation, 13K for a server. And you can increase total DOS memory from 640K to 704K—**Now you can have over 630K of *free* DOS memory while running the network!** If you don't use expanded memory, the overhead is still low: 60K for a workstation, 80K for a server.

- Prices include network boards and software—Nothing extra to buy.
- NET/30 Network Operating System is full-featured, easy to install, and has extensive on-line help. Can be used with or without expanded memory.

"Good performance under load, elegant design, low price, simple cabling requirements, and broad compatibility."
—*PC Week*

"The Invisible Network is terribly easy to install. And it's inexpensive."
—*LAN Magazine*

"A joy to use. I highly recommend it."
—*Data Based Advisor*

	Model 200	Model 300	Model 300/A	Ethernet
Compatibility	IBM PC/XT/AT 8 Bit	IBM PC/XT/AT 8 or 16 Bit	Micro Channel 16 Bit	IBM PC/XT/AT 8 bit
Speed	1.8 Mbps	3.0 Mbps	3.0 Mbps	10.0 Mbps
Wiring	Twisted pair	Twisted pair	Twisted pair	Thin coaxial
Price	$215.00 ea.	$315.00 ea.	$399.00 ea.	$399.00 ea.

- File sharing, print spooling, file/record locking, electronic mail, menu system, security, network management, diskless workstations, diagnostics.
- Also compatible with NETBIOS, IBM PC LAN Program, Novell Netware.
- 30-day money-back guarantee and one-year warranty.

For more information, call **(415) 570-5967** or write.

Invisible Software, Inc.
1165 Chess Drive
Suite D
Foster City, CA 94404
(415) 570-5967
Fax (415) 570-6017

AST Computers

Bravo/286	799
Premium/286	1149
Premium 386/16	1999
Premium/386C	2549
Premium 386/25	3449
Premium 386/33	3989

CITIZEN Computer

MATE/12+	1199

EPSON Printers

LX810	189
FX850/1050	335/445
LQ510	329
LQ850/1050	519/729
LQ2550	919

CITIZEN Printers

180D	159
HSP500/550	299/429
GSX-140	329

Brother Printer

HL-8e Laser	1839

#1 COMPUTERS
800-344-6468

CIRCLE 479 ON READER SERVICE CARD

THE GIANT SLAYER$

386-33MHz, 32K cache	$3695
386-25MHz, 32K cache	$1995
386-20MHz, 0 wait state	$1395
386SX-20MHz, (Neat)	$1195
286-20MHz, 0 wait (Neat)	$1095
286-12MHz, 0 wait state	$ 875

All systems include: 1MB RAM, 1.2MB FD, 230W PS FD/HD Controller (1:1 Interleave), 2 Ser./Par. Ports Enhanced Keyboard, 1 Year warranty Parts & Labor.
Low cost: 20MB-380MB, Memory, 287, 387, Video, etc.
Special: VGA (800X600) & 14" M/sync monitor $595

ESC Computers, Inc.
(800)747-4ESC or (213)655-3605
8344 Melrose Ave. LA, CA 90069 FAX(213)655-8945
Price & Specifications subject to change, Terms extended to Gov. & Corp. 15% Restocking with RMA #

CIRCLE 585 ON READER SERVICE CARD

FOR
FREE INFORMATION
HOW TO GET
TANDY COMPUTERS
FOR
THE BEST PRICE
CALL FREE 800-433-SAVE
(9-5 CENTRAL, MON-FRI)
FORT WORTH COMPUTERS, 377 PLAZA
GRANBURY, TX 76048, (817) 573-4111

CIRCLE 455 ON READER SERVICE CARD

Computers/Systems

CompuMart Computer Catalog
FREE! VCR FREE!
with selected products
14 US Warehouses
Best Prices in US
250+ Full Color Pages
Over 4,500 Products
Detail Descriptions
Software and Hardware
1-214-631-1222

CIRCLE 513 ON READER SERVICE CARD

REVITALIZE
the Compaq Portable with a complete 80386 system upgrade

Superior quality components including US-made 80386, 1 Mb RAM, 160W p/s, 1.2 Mb floppy, 45 Mb 28 Ms disk, 1:1 controller, installed and with 1 year warranty
$2,345
With 88 Mb CDC Swift, 15 ms
$2,995
You won't believe the difference!
Complete upgrades performed or kits available for IBM XT, AT and compatibles, $1,395 - $2,995.

5G Corporation
4131 Spicewood Springs - A-4
Austin, TX 78759
800/333-4131 • Fax 512/345-9575

CIRCLE 465 ON READER SERVICE CARD

MARYMAC®
Our 13th year of DISCOUNTS
COMPUTERS &
CELLULAR PHONES
Fgt. Prepaid. Save Tax
Toll Free 800-231-3680
We will meet or beat...
GUARANTEED LOWEST PRICES
Radio Shack® SCO® Tandy®
22511 Katy Fwy.
Katy (Houston) TX 77450
1-713-392-0747 FAX (713) 574-4567

CIRCLE 563 ON READER SERVICE CARD

CATALOG PC WORLD
REACH 2.1 MILLION BUYERS.
ADVERTISE IN *The PC World Catalog.*
CALL 800-435-7766
In CA: 800-435-7760

CATALOG

PC WORLD

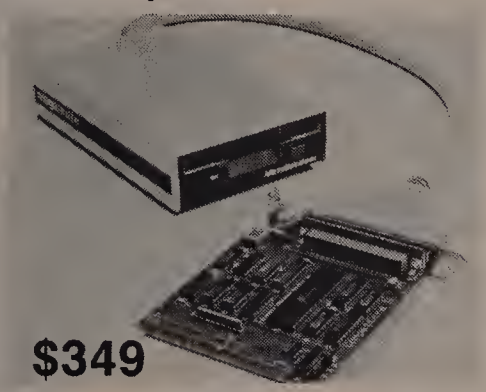
Shop *The PC World Catalog* for fast solutions to your PC needs.

Disk Drives

Did You Hear Who's Easy?

megamate

— easy to use, easy to install, and easy on the wallet. **Megamate** is the 3.5 inch 1.4 MB drive you can add to any PC/XT/AT.



$349

- Installs in just minutes.
- Handles any 3.5 inch IBM disk, 720 KB or 1.4 MB automatically.
- Complete – drive, card, software.
- Attractive and compact, barely bigger than a diskette.

MicroSolutions Computer Products
132 W. Lincoln Hwy
DeKalb, IL 60115
815.756.3411

CIRCLE 536 ON READER SERVICE CARD

Never pay for another ribbon!

MacInker™, the automatic ribbon re-inker re-inks any fabric ribbon at 5 cents/re-inking in black or any color. Lubricating ink cools ribbon, extends printhead life. Avge. re-inkings per cartridge, 60-100. **Universal** MacInker (cartridge or spool) **$68.50. Epson or Imagewr. $42.00. Multicolor adaptors** available for 4-color cartridges. Over 100,000 sold, over 20,000 printers supported. Satisfaction or 30 day refund. Free keybeeper-flashlight for orders >100$. **Order toll free** or call for free catalog.

(800) 547-3303
Major credit cards, cod, POs from national accounts accepted.

Computer Friends
14250 Science Pk. Dr.
Portland OR 97229
tel. (503)626-2291
fax (503)643-5379

CIRCLE 483 ON READER SERVICE CARD

9-Track Tape Subsystem

Now you can exchange data files between your IBM PC/XT/AT and any mainframe or minicomputer using IBM compatible 1600 or 6250 BPI 9-Track tape. Unit can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10½" streaming tape drive, tape coupler card, cables and software.

QUALSTAR®
9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822

CIRCLE 527 ON READER SERVICE CARD

Memory Chips

LOW, LOW PRICES

256k, 1 meg
SIMM/SIPP
Memory Upgrades
for IBM PS/2
All Speeds
Intel
Math Co-Processors
All MHz's
8087, 80287, 80387

R&R ELECTRONICS
6050-X McDonough
Norcross, GA 30093
1/800-736-3644

CIRCLE 499 ON READER SERVICE CARD

Peripherals

PLUG A CASH DRAWER INTO YOUR COMPUTER

Turn your Computer into a powerful Point of Sale System!

Colors, Sizes, and Models for All Applications

Interface Options
- RS-232 serial (3 types)
- Centronics parallel
- Receipt printer interfaces
- Others (TTL, Signal pulse, non-connected, multiple drawer)

For catalog & details:

APG
1601 - 67th Ave. North
Minneapolis, MN 55430 • (612) 560-1440
A Division of Upper Midwest Industries, Inc.

CIRCLE 512 ON READER SERVICE CARD

Cost-Effective Nine-Track Drives

DOS
IBM 3X
IEEE
PS/2
μ VAX
RS-232
SCSI
XENIX

See us at Comdex Booth #2029

Call **800/842-0708**
TDX Peripherals, Inc.
80 Davids Drive
Hauppauge, New York 11788

TDX PERIPHERALS

CIRCLE 497 ON READER SERVICE CARD

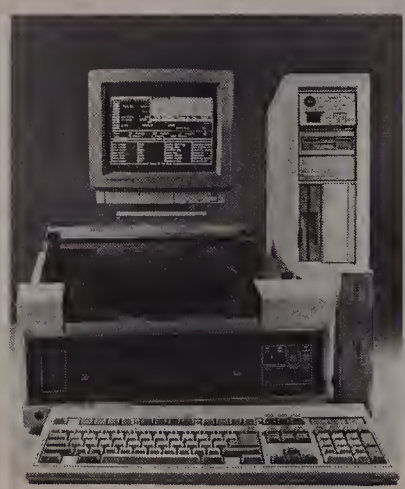
CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

REEL 9-TRACK GENIUS

OVERLAND DATA will bring out the **GENIUS IN YOU** when it comes to connecting your PC to the mini/mainframe world. **OUR ENGINEERS DESIGNED** the most successful tape drives, controllers and software in use today. Call the experts . . . **ODI!**



- PC/XT/AT/386/PS2 & Compat.
- DOS, XENIX, UNIX, NOVELL
- 800, 1600, 3200, & 6250 BPI
- Outstanding Customer Support
- 24-hour delivery available on Cipher, Qualstar, Anritsu & M4

"See us at Comdex #W604"

Overland Data
"Experience Makes The Difference"

CALL TODAY AT 1-800-PC-9TRAK!

5600 Kearny Mesa Road • San Diego, CA 92111
TEL: 619/571-5555 • FAX: 619/571-0982

CIRCLE 554 ON READER SERVICE CARD

Plotters

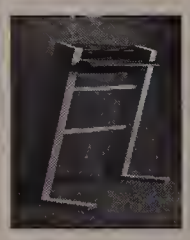
Plotters for people who want more but can't afford expensive.

Now, you don't need a big budget to get quality and performance from your plotter. That's why Zericon's large format plotters are becoming so popular.

$1695.-$2995.

Our D size starts at $1695 and our A-E model is only $2995 direct from Zericon.

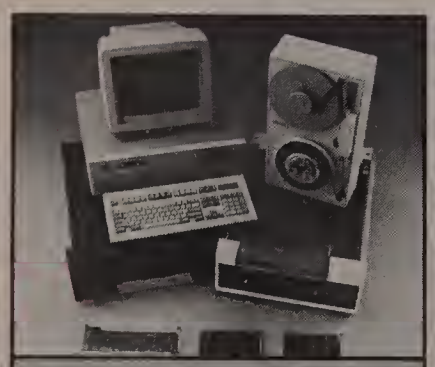
Call us today for a free sample plot and info about our money back guarantee. 40491 Encyclopedia Circle, Fremont, CA 94536.
In CA (415) 490-8380
FAX: (415) 490-3906



(800) 727-8380

ZERICON
More Plotter. Not More Money.

CIRCLE 532 ON READER SERVICE CARD



9-TRACK TAPE
Data Conversion Systems

- Exchange data between mainframes and PCs.
- Transfer data from tape to disk, and from disk to tape.
- Supports Micro Channel systems.
- PC-DOS and Xenix versions.
- Complete subsystems

FLAGSTAFF ENGINEERING 602-779-3341 FAX 779-5998

CIRCLE 582 ON READER SERVICE CARD

KODAK DATASHOW

+Eiki, Apollo, Chisholm and others.
Prices start at
$599
Solutions for VGA, EGA, CGA, all MACs & more
M/C, VISA, AMEX & COD

BOXLIGHT CORPORATION
(415) 892-4744
Computer-Based Presentation Systems
Since 1984

CIRCLE 596 ON READER SERVICE CARD

Power Supplies

BATTERY BACK-UP POWER PROTECTION

WORLD FAMOUS
~~WAS 595.00~~ **NOW 249.95**
PERFECT FOR PERSONAL COMPUTERS
CALL FOR **FREE** AUDIO SEMINAR
1-800-433-2288
VISA and MASTERCARD ACCEPTED

CIRCLE 568 ON READER SERVICE CARD

Security

HANDS OFF THE BOARD™

PC SECURITY

½ SIZE SECURITY BOARD

- Stop floppy boot—Require password to boot PC
- Real-time disk encrypt—prevent boot sector virus
- Prevent DOS FORMAT/FDISK and low-level formats
- Set hard disk READ ONLY or turn ON/OFF
- Turn floppies, printers and COM ports ON/OFF
- IBM XT, AT Bus—DOS V3.0+

Price **$149.95**
add 5.00—shipping/handling
Check, Money Order, VISA, MC accepted
Systems Consulting Inc.
412-963-1624
PO Box 111209, Pittsburgh, PA 15238

CIRCLE 515 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

PASSWORD/FILE SECURITY
CONTROL USE OF YOUR PC/XT/AT/386

DataLock™ Security System

- Hardware card installs in any full or half slot
- Activated automatically at power up
- Password protected boot for 21 users
- **System Administrator can prevent access by any user to entire disk drives, individual files, whole directories, serial/parallel ports, serial net, modem**
- Audit trail capability, report generation
- Floppy disk utilities and manual included
- Completely menu-driven
- Cabinet Lock prevents removal of DataLock

For more information or ordering
CALL (516) 673-9257

$145 + $5 S/H VISA/MC/MO/COD/CHK/PO
1-Year Warranty NY state residents add 7.5% tax

MicroDevelopment Corporation
8 Milford Lane, Melville, NY 11747

CIRCLE 547 ON READER SERVICE CARD

Tape Back-Ups

9-Track Tape For Your IBM PC/XT/AT/PS-2™

Read 1600 bpi 9-track tapes from a micro, mini or mainframe in EBCDIC or ASCII as mirror image or by individual files.

Use the 2000 PC™ for disk backup, data interchange or archival storage.

PC/XT/AT/PS-2 are trademarks of IBM. 2000 PC is a trademark of Digi-Data.

DIGI-DATA CORPORATION
8580 Dorsey Run Road
Jessup, MD 20794-9990
(301) 498-0200
FAX (301) 498-0771
®... First In Value

CIRCLE 428 ON READER SERVICE CARD

BIT BUCKET™

$3.95 plus $1.00 S&H

Keeps your work area clean, tools handy. Flat back adheres easily to any device.

J-BAR ASSOC.
Box 9101 Southboro, MA 01772
(508) 485-0878

CIRCLE 592 ON READER SERVICE CARD

Bar Coding

PC-WAND®

Bar Code Solutions

NEW - BIG Text, AIAG, LOGMARS. Bar code printing packages, any label, most printers.

PC-WAND 100 - In-line scanner emulates 2ND keyboard on PC, XT & AT. Uses your existing software without any change.

PC-WAND 200 - terminal wedge on a serial "party line" for laptops and unix minis.

NEW PC-WAND 300 - Up to 128 reader data collection system • Auto-discriminates • Collects, and transmits to PC or host.

PC-WAND 800 WanderWand - portable programmable scanners: laser and pen.

INTERNATIONAL TECHNOLOGIES & SYSTEMS CORP.
635-C North Berry Street, Brea, CA 92621
PHONE: 714 990-1880
FAX 714 990-2503

ITS

DEALER INQUIRIES INVITED

CIRCLE 501 ON READER SERVICE CARD

MISCELLANEOUS/Accessories

Mouse Pads w/your Logo

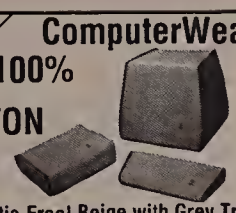
Qty.	Canvas	Hard Surface
•12	$8.50	N/A
•72	$4.90	$5.90
•144	$3.70	$4.70
•500	$3.14	$4.14
•1000	$3.03	$4.02

Canvas Pads: Grey, Red, Gold
Hard-Surface: Grey, White, Blue
Size: 9.5" × 8" × ⅜" Multi-color OK
SAMPLES with your logo $12.50
ALL prices include logo.
Entire pad imprintable.
Imprints 100% GUARANTEED
Computer Expressions
3833 Chestnut Street
Philadelphia, PA 19104
800/443-8278

Laptop Carrying Case

The BERITHCASE is a laptop case and briefcase combined. Made of Propex Ballistics, a virtually indestructible material frequently used in bulletproof vests. Voted top case in '88. Fits all best-selling laptops on the market. 4 styles to choose: $79-$159. (Retail).
ASK FOR OUR FREE CATALOG.
ISIS International, Inc.
7100 N. Broadway, Suite 6-L
Denver, CO 80221
303/650-1492 (fax) 303/640-1494

DUST COVERS **ComputerWear**
100% COTTON CANVAS



Breathable! Static-Free! Beige with Grey Trim
For Computers, Keyboards, Printers & Lasers
All Popular Models. Superior Quality. Best Price

NEW! Seal-Skins For Keyboards

1-(800) 826-5761
Int'l 415 759-1466 Fax: 415 564-0506
1320-36th Ave San Francisco CA 94122

CIRCLE 543 ON READER SERVICE CARD

FREE CATALOG

A full line of Computer Supplies & Accessories
BULK DISKETTES - 100% LIFETIME WARRANTY

5.25" DS/DD Min 50, Sleeves, WP Included **26¢**
5.25" DS/HD (Min 50) **62¢**
3.5" DS/DD (Min 30) **89¢**

GAAN Computer Supplies
186 B East Sunnyoaks, Campbell, CA 95008
Call 800-523-1238
In Calif 408-370-6747

CIRCLE 431 ON READER SERVICE CARD

FREE GLOBAL CATALOG

148 page guide to computer furniture, supplies and accessories

Dial Toll-Free
1-800-8-GLOBAL

GLOBAL COMPUTER SUPPLIES
11 Harbor Park Dr.
Port Washington, N.Y. 11050

CIRCLE 508 ON READER SERVICE CARD

Custom Imprinted
IBM Key Caps

Hooleon SnapCap Kits Supporting:
WordPerfect 5.0™
or **IBM 5251 Emulation**
For **IBM® 101-Key Keyboards**
Customize Your Keyboard with
Relegendable Keys
for Cherry™, Wyse™ & Key Tronic™
Custom Key Imprinting
Keytop Label Kits for software
Custom Keytop Label Imprinting
Keyboard Protectors & More

FREE CATALOG!

See us at
Fall Comdex
in the
Riviera - Booth #R8534

Phone: 602-634-7515
Fax: 602-634-4620

Hooleon CORPORATION P.O.B. 201, Dept. PCWD Cornville, AZ 86325

CIRCLE 518 ON READER SERVICE CARD

PC™ PERCON®

When You Can't Afford to Compromise on Quality,
Call Us At...
1-800-873-7266
FAX (503) 344-1399

BAR CODE & MAGNETIC STRIPE READERS for the IBM PC & PS/2

Simple & quick installation
No additional software or port
Metal wand & case
Also available:
SmartCard encoder/reader
Bar code printing software
Magnetic stripe encoders
Units for other computers & terminals

TPS ELECTRONICS
4047 Transport Street
Palo Alto, CA 94303
Telephone: 415-856-6833
Telex. (Graphnet) 371-9097 TPS PLA
FAX: 415-856-3843

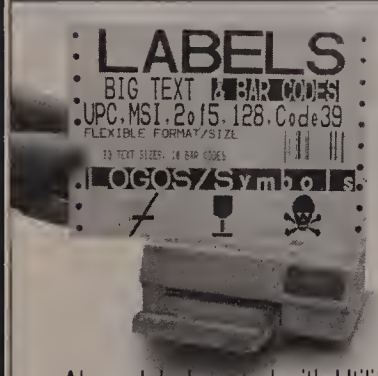
CIRCLE 522 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

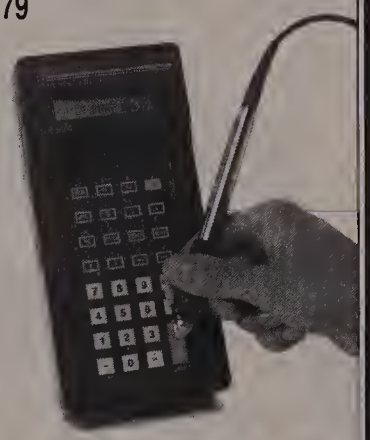
LABELING SOFTWARE



- For Epson, Oki, IBM, and LaserJet
- Flexible design. Any Format or size.
- On-Screen Label Design — WYSIWYG
- 13 text sizes — 1" reads at 50'
- Bar codes: 2of5, 128, UPC/EAN AIAG, MIL-STD, Code 39, etc.
- Auto-incrementing. File input.
- Logos, symbols — from scanners.
- Reversals, color, soft fonts.
- Powerful, Versatile, Fast, Easy!

- Above label printed with Utility II LabelRIGHT ™— **$279**
- Other menu driven programs from **$49**. XENIX — **$199**
- MS-DOS user callable routines from **$179**

Portable Readers



- Battery operated reader
- Simple, powerful, 64K memory
- Bar code or keyed input
- MSI, 2of5, UPC/EAN, 128, Code 39
- Easily programmable prompts
- Uploads via RS-232 or keyboard
- Doubles as non-portable reader
- Wand or laser input
- Complete with wand — **$849**

Bar Code Readers

for PC, XT, AT, PS/2
and all RS-232 Terminals

- Attaches as 2nd keyboard
- No software changes
- 2of5, UPC/EAN, 128, MSI, Code 39
- Magstripe, laser, or wand input
- Complete with steel wand — **$399**

FLEXLINES MAGAZINE

WORTHINGTON DATA SOLUTIONS

Direct from manufacturer
30 day $ back guarantee!

417-A Ingalls Street
Santa Cruz, CA 95060

800-345-4220
CA 408-458-9938

BAR CODE

PRINTING SOFTWARE

PrintBar II prints Code 39, UPC, EAN, and 2 of 5 bar codes **directly** from your programs in dBASE, Lotus, C, BASIC, etc., on Epson, IBM Graphics, and H-P LaserJet printers. **$295.00**

Keyboard wedge and portable **BAR CODE READERS** from **$395.00**

FREE BROCHURES (916) 622-4640 / FAX 916 622 4775

Bear Rock

6069 Enterprise Drive, Diamond Springs, CA 95619

CIRCLE 557 ON READER SERVICE CARD

BAR CODE READERS

FOR PC'S:
- PC/XT/AT & CLONES
- PS/2 - ALL MODELS
- TANDY 1000 SX/TX/SL/TL/1200/3000/4000
- ZENITH 138/148/151/158/248
- EPSON EQUITY III/I+/II+/III+

★ NO SOFTWARE CHANGES REQUIRED
★ DATA APPEARS AS KEYBOARD INPUT
★ READS CODE 39, I-2 OF 5, UPC A/E, EAN 8/13, CODABAR
★ AUTO-DESCRIMINATES BETWEEN CODES
★ DIRECT FROM MANUFACTURER
★ 30 DAY MONEY BACK GUARANTEE
★ SAME DAY SHIPPING

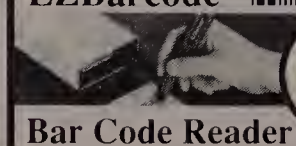
FOR TERMINALS:
- WYSE 30/50/60/75
- KIMTRON KT7/PC & KT70/PC
- LINK MC-5
- RS-232

BAR CODE PRINTING SOFTWARE:
- MS/PC DOS SYSTEMS
- 9 & 24 PIN DOT MATRIX
- H-P LASER JET/PLUS/SERIES II

RESELLER DISCOUNTS AVAILABLE

AMERICAN MICROSYSTEMS
1110 S AIRPORT CIRCLE, SUITE 140
EULESS, TX 76040 (817) 571-9015
(800) 648-4452
FAX (817) 685-6232

EZBarcode™



$289.00 Includes EZBarcode I Printing Software

Bar Code Reader

Model PC-WEDGE Reader $289.00
No software changes necessary • For PC/XT/AT or compatible • Reads Code 39, 2 of 5, UPC, Codabar • EZBarcode I printing software included

EZBarcode I Printing Program
(ordered separately **$49.00**
Enter and print Code 39 and UPC-A • For dot matrix and LaserJet-printers • Vary bar code height, width, spacing, print density, etc.

EZBarcode II Printing Program $99.00
Keyboard or text file data input • Prints Code 39, 2 of 5, UPC A, EAN-13 • Multiple columns, automatic incrementing, on-line help

dBARCODE™ Program prints bar codes from within dBASE. • Add bar code printing to your existing dBASE programs **$99.00**

EZRes™ Memory resident program prints bar codes from DOS applications . . . **$99.00**

TimeKeeping Systems, Inc.
12434B Cedar Road • Cleveland, OH 44106
(216) 229-2579 • Fax: (216) 229-2573

Germany Softwerk GmbH (0911) 74 74 99
France Cab Gestion et Informatique (1)45 23 16 56
Australia Budgetware (2) 519 4372

VARIANT MICROSYSTEMS

BAR CODE READERS DELIVER

WAND/ LASER/ MAGNETIC CARD CONNECTIVITY

- Keyboard wedges (Internal/External) for IBM PC/XT/AT, PS/2 and portables.
- RS232 wedges for WYSE, Link, Kimtron terminals
- Autodiscriminate between codes 3 of 9, UPC, EAN, 12 OF 5, Codeabar, Code 128
- Interface with wands, Symbol Technologies, Metrologic and Photographic Sciences lasers
- Bar code and label printing software
- Full two year warranty
- **30 Day Money Back Guarantee**
- **Extensive VAR/Dealer Discounts**

VARIANT MICROSYSTEMS
3140 De La Cruz Blvd.
Suite 200
Santa Clara, CA 95054
Phone (408) 980-1880
Fax (415) 623-1372

CIRCLE 468 ON READER SERVICE CARD

Business Opportunities

Software Dealers Wanted

Perfect Care program needs dealers. We teach how to sell, install & support our medical billing sys. to MDs . . . a profitable high growth service industry. We offer:
- Training & continuous support
- 7 yrs of medical computer exp.
- Protected territories nationwide.

Ted Itzkowitz
STI Computer Services, Inc.
251 W. DeKalb Pike-Concord 107
King of Prussia, PA 19406
215/768-9030

Catalogs

IBM PCjr Specials

Full line of IBM PCjr hardware accessories including: Memory expansions, Second floppy drive, Hard drives, Cables, Larger keyboards, Modems, Printer expansions, Manuals, & software. Many more items are available. Send today for the complete catalog.
Computer Reset
Dept. PW, Box 461782
Garland, TX 75046-1782
214/276-8072

PCjr Expansion Products

Possibly the largest selection of PCjr products in the country. We don't just sell PCjr products, we design them.

- Speed Up Products
- Pseudo DMA Cartridges
- Second Floppy Disk Drives
- 3½ Disk Drives
- PCjr Optical Mice
- Monitor Adapters for PC's
- Parallel Printer Ports
- Full Size Keyboards
- Speech Attachments
- Joysticks, Cables, & Adaptors

Call or write to receive our free 32-page catalog of PCjr Add-On products. For even faster results, circle our reader service number.

PC Enterprises
"The jrProducts Group"
Box 292, Belmar, NJ 07719
(201) 280-0025 (800) 922-PCJR

CIRCLE 516 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Largest Software Library
Thousands of powerful programs for IBM/PC, XT, AT (3.5 format available) & Apple IIe, GS. Items including Business, CAD, Education, Games, & Religion. Free catalog sent to you by Airmail, specify your computer type, write:
Reliant, dept-pc
PO Box 33610
Sheungwan, Hong Kong

Computer Insurance

SAFEWARE
Insure your computer. Safeware provides full replacement of hardware, media, & purchased software. As little as $39 a year provides comprehensive coverage. With our blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm EST (Sat 9 to 5)
Safeware, The Insurance Agency
2929 N. High St., PO Box 02211
Columbus, OH 43202
800/848-3469, 614/262-0559

Data/Disk Conversion

Data/WP Conversions
MAGNETIC TAPE TO DISK
DISK TO MAGNETIC TAPE
(800/1600 BPI)
DISK TO DISK
SPECIAL APPLICATIONS
Over 2000 Conversions Available.
$35 per disk. Quantity discount available.
Magnetic Data Conversions Inc.
180 N. Michigan Ave. #1040
Chicago, IL 60601
800/621-9155, 312/726-6455

SCANNING any font or typestyle
disk or tape **CONVERSION**
DUPLICATION any size, any quantity

- Data Entry
- Custom Programming
- Data Management
- Bar Code Conversion

(312) 858-4566

We perform miracles!

MEDIA CONVERSION CORP.
Free Tests and Quotations—24 Hour Turn-Time

CIRCLE 462 ON READER SERVICE CARD

TAPE/DISK CONVERSIONS

Conversion services to or from over 2000 computer systems:
- Magtapes • Mini Computers
- Micro Computers • Typesetters
- Word Processors

CALL THE INDUSTRY LEADERS

PIVAR COMPUTING SERVICES, inc.

800-HI-PIVAR
165 Arlington Heights Rd #W
Buffalo Grove, IL 60089

Disk Copy Service

DUPLICATION FROM $.59
Affordable rates only $.59 (5.25") & $1.29 (3.50") for MSDOS and APPLE duplication. Prices go even lower as you continue to order.

- Highest Quality Media
- Duplication + 100% Verification
- Custom Labels/Sleeves/Mailers
- Formatted Diskettes
- Packaging & Assembly
- Special Rates for Demo Software and Site Licensing
- 24 Hour Turn-Around
- Guaranteed Products

Diversified Systems Group, Inc.
P.O. Box 1114
Issaquah, WA 98027
(800) 255-3142 (206) 392-0900

CIRCLE 422 ON READER SERVICE CARD

SOFTWARE PRODUCTION

- ★ Disk duplication
- ★ All formats
- ★ EVERLOCK copy protection
- ★ Label/sleeve printing
- ★ Full packaging services
- ★ Warehousing
- ★ Drop shipping
- ★ Fulfillment
- ★ 48-hour delivery
- ★ Consultation & guidance

Star-Byte, Inc.
2880 Bergey Rd., Hatfield, PA 19440
800-243-1515 215-997-2470

CIRCLE 519 ON READER SERVICE CARD

Disks

Why waste your time formatting disks?

Preformatted disks save you time and money!
Memorex • Nashua • 3M • Sony
$5^1/_4$" (from 48c) • $5^1/_4$" HD • $3^1/_2$" • $3^1/_2$" HC
Call toll-free TODAY!
1-800-321-4668
In Colorado (303) 423-0371. Open 8:00 to 5:30 Mountain Time, Monday–Friday.
ALF
ALF Products, 9840 Youngfield St. Wheat Ridge CO 80033

Why waste your time formatting disks?

Preformatted disks save you time and money!
Memorex • Nashua • 3M • Sony
$5^1/_4$" (from 48c) • $5^1/_4$" HD • $3^1/_2$" • $3^1/_2$" HC
Call toll-free TODAY!
1-800-321-4668
In Colorado (303) 423-0371. Open 8:00 to 5:30 Mountain Time, Monday–Friday.
ALF
ALF Products, 9840 Youngfield St. Wheat Ridge CO 80033

CIRCLE 502 ON READER SERVICE CARD

HIGH DENSITY 1.44 MB 100% ERROR FREE
1.44 MB $1.95 EACH IN LOTS OF 100

5.25" DS/HD 1.2 MB .... DK. BLUE – 69¢
PACKED IN LOTS OF 100 WITH TYVEC SLEEVES & TABS

5.25" DS/HD 1.2 MB, INCL. Sleeves & tabs, BLACK
Lots of 100 — 49¢ ..... Lots of 50 — 59¢

5.25" DS/DD 360K, INCL. Sleeves & Tabs
Lots of 1,000 — 21¢ ..... Lots of 200 — 25¢

3.5" DS/DD 720K (1MB)
Lots of 100 — 59¢ ..... Lots of 50 — 79¢

3.5" DS/DD 720K (1MB) — SONY BULK
Lots of 500 — 89¢ ..... Lots of 25 — 99¢

3.5" DS/High Density 1.44MB (2MB)
Lots of 100 — $1.95 ..... Lots of 25 — $2.50

AMERICAL GROUP
800-288-8025
12132 Sherman Way, N. Hollywood CA 91605
CALL OR MAIL C.O.D. VISA

CIRCLE 481 ON READER SERVICE CARD

FORMATTED DISKETTES BASF, MITSUBISHI, SONY

5.25" DS/DD	$.44
5.25" DS/HD	$.79
3.50" DS/DD	$.95
3.50" DS/HD	$2.45

- MSDOS & APPLE Formats
- Includes Sleeves & Labels
- Price Based On Qty 250
- Private Labeling Available
- Colored Media Add $.08
- Same Day Shipping

Diversified Systems Group, Inc.
P.O. Box 1114
Issaquah, WA 98027
(800) 255-3142 (206) 392-0900

CIRCLE 448 ON READER SERVICE CARD

TYVEK® PACKAGING FOR YOUR DISKETTES

- *World's largest manufacturer of Tyvek® Disk Sleeves (5.25, 3.5, 8)*
- *Tyvek® Pages hold 5.25 & 3.5 disks*
- *Pages punched for binders or bound with your documentation*
- *Custom printing on all products*
- *Quantities of 1000 and up*
- *Plain sleeves and pages in stock same day shipment from NY or CA*

Information & Free Samples
1-800-776-7633
(See us at Fall Comdex Booth #C900)

ipc INFORMATION PACKAGING CORPORATION
1670 N. Wayneport Rd., Macedon, NY 14502
TYVEK® is a registered trademark of E I DuPont DeNemours & Co., Inc

CIRCLE 498 ON READER SERVICE CARD

Networking

KEYCARD ELIMINATOR

KEYCARD ELIMINATOR D C B ELIMINATOR 4.61, 86, 2.0a, 2.1, & 2.11 FREE A SLOT!	$99
NETCRACK LOSE PASSWORD? ALL VERSIONS	$99
ELS UTILITIES KYBD & PrtSc FIX WP 5.0 FIX	$59
BIOS TOOLS PATCH DRIVE TABLES INCL GETDISK	$99

NEW! BACKDOOR for Novell Netware® PASSWORD & LOGIN NOT REQUIRED! ALL VERSIONS $279

(619) 632-7384 NBS
NETWORK BUSINESS SYSTEMS
1836 Lake Drive
Cardiff, CA 92007
NOVELL AUTHORIZED RESELLER

CIRCLE 403 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Supplies

REMANUFACTURED TONER
100% GUARANTEED Cartridges

Emerald Laser Products
552 W. I-30 #148
Garland, Texas 75043
(214) 475-5006

- 40 Step technically advanced process
- Super black graphics
- 24 Hour turn around

1-800-441-2235

$38.50 +$ 3.00 S/H
Also NEW Laser Printers and Laser Products

CIRCLE 424 ON READER SERVICE CARD

HEWLETT PACKARD
Toner Cartridges $79
Cash & COD price; 3% charge for VISA, MC, AMEX Min. order qty 2
800-444-5049
ext. 10 Supplies Division
Deerfield Data Systems INC.
Call for our FREE Catalog!
"HP Specialists Since 1981"

CIRCLE 587 ON READER SERVICE CARD

Rebuilt TONER Cartridges

series I or II TONER CARTRIDGE $81 3 or more

FROM 34.95

- 100% Guaranteed
- 24 Hr. Return
- Quantity Rates
- Colors

Full line of computer supplies and accessories
Ask for discounted price list

Ricoh Toner 18.95 10 or more

laserstar data
9 Briscoe Street
Woburn MA 01801
1-800-432-9989
Dealer Training Available

CIRCLE 484 ON READER SERVICE CARD

TONER CARTRIDGE RECHARGING $38.50 + $3.00 S/H with Exchange

- QUALITY EQUALS OR EXCEEDS ORIGINAL!
- 20% MORE TONER — 24 HR. TURNAROUND
- LASER PRINTERS & CANON PC COPIERS

100% GUARANTEED!
We Buy Empties - Please Call

RDS Recharging Systems
18 Briarcliff Avenue
Poughkeepsie, NY 12603
1-800-344-9951

CIRCLE 419 ON READER SERVICE CARD

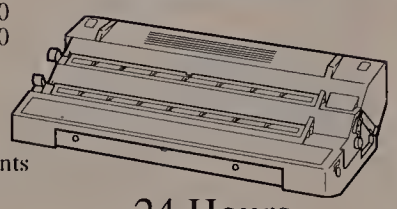
TONER — **2 DAY AIR** Prepaid Return

- Remanufacturing Services (your cartridge)
  - Laser cartridges in Black $44.50
  - Laser cartridges in Colors $64.50
  - PC cartridges in Black $39.50
  - Microfiche/Fax cartridges $44.50
- In stock rebuilt laser cartridges $59.50

Get back your cartridge!
Every cartridge pretested!
Color test prints available!

- We support over 200 diff. printers! • Bulk
- New Cartridges from $89.50 • Qty. discounts
- We buy empties in large quantities, call.

100% Satisfaction



24 Hours
800-777-8444

LASER QuipT
9723 Mill Creek Drive
Eden Prairie MN 55344
•Franchises
•Wholesale

CIRCLE 574 ON READER SERVICE CARD

reconditioned **TONER cartridges!**
for laser printers & Canon PC Copiers

BETTER THAN NEW!
- 20% MORE TONER
- DARKER PRINT
- 100% GUARANTEED

Willow Products Corp.
3857 Willow Ave, Pgh, PA 15234

From $44.95
We buy empties
call for brochure
800-426-8196
WILLOW

CIRCLE 535 ON READER SERVICE CARD

SOFTWARE/Accounting

dBASE Business Tools
- GENERAL LEDGER
- ORDER ENTRY
- dINVOICER & A/R
- SALES ANALYSIS
- SERVICE BILLING
- ACCOUNTS PAYABLE
- PURCHASING/INVEN.
- JOB COSTING
- JOB ESTIMATING
- PAYROLL

$99 ea + s/h includes *dBASE* 2, 3 or 3+Source Code. MC/AmEx/Visa/chk/COD.
Datamar Systems
4876-W Santa Monica Ave.
San Diego, CA 92107
619/223-3344

Industrial Strength Payroll™
Solve tough payroll problems with Phoenix Phive's expanded version of its popular PAYROLL software! Features include:
- Multi-company/client
- Cafeteria plans/401(k)'s
- Multiple pay periods
- Client billing
- Unlimited employees/1099's

Industrial Strength Payroll™ $245
Also available PAYROLL 2.5 $95
Shipping $3.50 Visa MC Amex
MONEY BACK GUARANTEE

Phoenix Phive
Solve your payroll problems today! Call, fax or write:
7830 East Gelding Drive, Ste 400
Scottsdale, AZ 85260
602-483-0991 Fax 602-948-1379
1-800-331-1811

CIRCLE 463 ON READER SERVICE CARD

P.C. Copier & Laser Printer Owners

TONER Service Company
UPS to:
2128 Dolman
St. Louis, MO
63104

We buy empties - $10.00
Ricoh Compt. Toner Kit 80 - $49.95/cs.
314-776-1155 / **800-88-TONER**
MC/VISA & Corporate Accounts Welcome

CIRCLE 545 ON READER SERVICE CARD

HEWLETT PACKARD
GENUINE TONERS
$79.95 QUANTITIES OF 3 OR MORE
Series II (92295A) or Original (92285A)
HUGE INVENTORY IN STOCK!
For Same Day Shipment Call:
•1-800-22-TONER
•1-800-228-6637
PLOTTER SUPPLIES AT SIMILAR SAVINGS
TONERS PLUS...
206 A Street • Needham, MA 02194

CIRCLE 600 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Abasoft $99 or $179

- RECEIVABLES (AR), Sales Analysis Time Billing, Manual Invoices
- GENERAL LEDGER (GL), Report Writer
- PAYABLES (AP), Checks, Vouchers

Financial (AR GL AP) $99

- INVENTORY, Sales Orders, RMA's

Purchase Orders, Material Rcpts
Production Mgmt, POS Invoices
Financial (AR GL AP) & Inventory
$179. Plus $11 s/h.
Call toll-free or write for brochure.
ABASOFT Corporation
4 High Street
Hampton, NH 03842
800/477-4114, 603/926-1007

PC-FUND®

The leading fund accounting system for local governments and non-profit organizations. Modules include General Ledger, Payables, Encumbrances, Obligation Tracking, Receivables, Payroll, Budgeting, Fixed Assets and Donor Receipts. PC-FUND runs on the IBM-PC and compatibles under MS-DOS, XENIX, AND most LANs.
American Fundware, Inc.
Box 3028
Steamboat Springs, CO 80477
303/879-5770, 800/551-4458

MIP Fund Accounting

The MIP Fund Accounting System meets the financial & managerial reporting requirements of not-for-profit & governmental organizations. Modules offered: G/L, A/P, A/R, Payroll, Encumbrance, Expenditure Budget, Revenue Budget & Lotus/dBASE Interface. MIP FAS is available for IBM XT/AT. Also, Network available.
Micro Information Products
505 East Huntland Dr. #340
Austin, TX 78752
800/647-3863, 512/454-5004

FUND Accounting

Automatically reports your most pressing info needs: Mgt. reports, financial stmts., budget comparisons, project expenses. FREE spreadsheet interface. Integrates with AR, AP, Payroll. PC-Network compatible. Demo, pre-sale set up, post-sale training/installation available. 30-days FREE phone support.
Executive Data Systems, Inc.
1845 The Exchange #140
Atlanta, GA 30339
800/272-3374, 404/955-3374

Nonprofit Software!

ECHO software has been meeting the needs of hundreds of organizations like yours since 1980. We offer complete Accounting, Fund Raising Management, Human Service Client Information & Third-Party Billing Systems. All provide clear, tight audit trails, flexible reporting & easy operation. Single user & network versions available. For information:
Echo Consulting Services, Inc.
PO Box 540
Center Conway, NH 03813
800/635-8209, 603/447-5453

DDPay - It's Like Owning Your Own Payroll Service

The easiest payroll system is now unsurpassed with power and flexibility with Ver 3.1. Features include full laser printer compatibility, will fill in forms 941, 940, W-2, W-3, 1099, SUI reports for certain states, print siginature on checks, 401K and cafeteria plans, restaurants. Use it for up to 150 companies.
Send $35 for 30 day trial, or $395 complete, 30 day money back guarantee.

DOUGLAS DANIELS SOFTWARE INC.
P.O Box 1184, Great Neck, N.Y. 11023. (718) 343-1434.

CIRCLE 449 ON READER SERVICE CARD

EA$Y MONEY

ACCOUNTING SOFTWARE

Buy direct and Save!! Over 35,000 sold at $595.
NOW ONLY $28! + $5 S/H. Visa, MC, AX, COD.
30-DAY MONEY BACK GUARANTEE. CALL 1-800-288-9561
EA$Y MONEY • 427 Grand Canyon Dr. • Madison, WI 53719

CIRCLE 441 ON READER SERVICE CARD

LedgerMax II

"I learned LedgerMax in about two hours, without looking at the book. It was so easy!" Ann Benezra
The complete, integrated system for small business. Includes checkwriter GL, AR/AP, Reports, Payroll & more $224. Try before you buy with our free evaluation disk. Call or write now:
Small Byte Systems, Inc.
954 Pearl Street
Boulder, CO 80302
303/440-3537

DATASMITH Payroll

Ten years in the field. Pension/cafeteria plans, magnetic filing, multi-states, multi-companies, more. Regular & special deductions with tax treatment control. Exempt/deferred payments. Easy Corrections! Advanced options include Direct Deposit, Benefit Accrual, IMPORT/EXPORT, more. Order demo today!
Datasmith, Inc.
10020 Fontana Lane
Overland Park, KS 66207
913/381-9118

Artificial Intelligence

THE GREAT THEOREM PROVER

proves theorems in the language of predicate calculus using the resolution principle. Experiment with search strategies. Ideal for computer scientists, mathematicians, AI'ers. Sample theorems included. **$59.95. MC.**

NEWBORN SOFTWARE

P.O. Box 429, Victoria Station
Westmount, Quebec, Canada H3Z 2V8
(514) 482-8227

CIRCLE 533 ON READER SERVICE CARD

Business Applications

Do You Ship by UPS®?

If you do, the Aristo Parcel Shipping System (APSS™) is for you! Meets all UPS requirements. Prints COD & regular labels, Pickup Manifest, etc. Saves customer list. Calculates zones & charges. Flexible setup menu to suit your needs. On-line help. Optional scale interface & other carriers. $395 & up; 60 Day $ back gtd. UPS acceptance gtd. Full featured demo disk: $4 s/h.
Aristo Computers, Inc.
6700 SW 105th Ave. #307-J
Beaverton, OR 97005
800/3ARISTO, 503/626-6333

ACT 1 SERIES
$179.50
+11.50 Shipping & Handling, U.S.

Includes:
General Ledger
Accounts Receivable
Inventory
Sales Invoicing
Accounts Payable
Payroll

1-800-344-2540

COUGAR MOUNTAIN
S·O·F·T·W·A·R·E
2609 Kootenai • Boise, Idaho 83707

Accounting At Its Best

OTHER PROGRAMS AVAILABLE
ACT-2 multi-user or network ready accounting.
ACT-4 multi-user for XENIX System V Fund Accounting, single and multi-user for non-profit organizations.
Bill of Materials for manufacturing inventory.
Point of Sale with bar code and cash drawer interface.
Training Seminars and Toll-Free Hotline Support Available.
Hardware Requirements: IBM PC* or compatible. Hard disk required.

ACT 1
BEST BUY
3 Consecutive Years

Trademark: IBM-International Business Machines. XENIX. Micro Soft.

CIRCLE 553 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Pay less to ship UPS!
Automate UPS shipping, save time & money with the Parcel Shipping Program (PSP). Prints UPS labels & COD tags. Maintains customer list. Calculates UPS charges & UPS Manifests, ensures accurate billing. UPS Approval & $ back gtd. $299. $ off Introductory offer. $5 Demo.
East Hampton Industries, Inc.
81 Newton Lane, Drawer EEEE
East Hampton, NY 11937
800/645-1188, 516/324-2224
FAX 516/324-2248

EntreQuik
Got a great idea for a new business? Let ENTREQUIK put your idea to the financial test:
- forecast start-up requirements
- project cashflow, ROI, ROE,...
- prof. looking financial statements
- what-if scenarios & more

Menu-driven, IBM PC, Lotus 123 R2-2.2 reqd. Step-by-step manual. $69.95 US includes s/h.
30 day money back guarantee.
Banyan Business Software Inc.
#438 - 1755 Robson Street
Vancouver, BC, Canada V6G 3B7
604/681-7936

Depreciation Plus
Saves YOU Time & Money. The Fixed Asset Management Tool for everyone who deals with depreciable assets.
- Computes ALL types Depreciation
- Prints Tax Summary Reports
- Maintains & Auto Updates Files
- Makes Projections & Estimates

PC/Compatible, MS-DOS 2.0+ & printer $45. VISA/MC/Check/COD, 3½" add $2.
T. Engel & Associates
R.1 Box 175
Radcliffe, IO 50230
515/899-2308, 515/859-7151

BusinessTools
BizPlanBuilder™ Proven business & marketing plan template for raising capital, or launching new products or services. 90+ pages of outlines, headlines, structured texts... typed & formatted into 33 wordprocessing files. Linked financial worksheets for Lotus, Excel. $99

"We applied for a loan in early November and by Christmas we had $4,200,000."
"My CPA highly recommends it."

Companion software packages:
- **DealMaker**™ Business Valuation $595
- **Forecast Express**™ Cash mgmt-PC $199
- **Sales Quota Mgmt** for mgrs+reps $149
- **Production Financial Model** $149
- **Private Placement Memorandum** $149
- **Limited Partnership Agreement** $149
- **Employee Policies Handbook** $99

30-day approval. Visa-MC-Amex +Shipping
800/ 442-7373 • 415/ 941-9191

CIRCLE 555 ON READER SERVICE CARD

THE GENERAL STORE RETAIL OPERATIONS SYSTEM
The complete software system for Retail. Multiuser/Network ready. Supports cash drawers, barcode, receipt printers, customer displays, scales and online credit card authorization. Controls all types of retail stores. Call today for more information.

Accounts Receivable
Inventory Control
Point of Sale
Accounts Payable
General Ledger
Mailing List
- Hardgoods
- Apparel

$995 Complete system
Dealer inquires invited.

Crichlow Data Sciences, Inc.
(804) 471-0500
P.O. Box 6420 - Virginia Beach, VA 23456

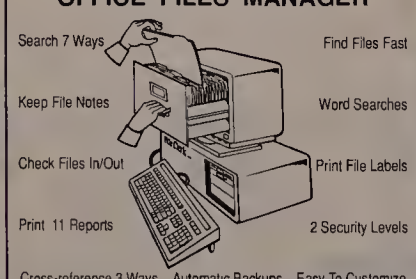
CIRCLE 470 ON READER SERVICE CARD

Achieve Market Leadership
Chosen by Lotus for 1-2-3 Users
- Marketing Edge 4.0 - The Market Planning Expert $399
- Executive's Mkt. Decision Kit $299
- Target Market Selector $199
- Pricing Edge $199
- Advertising Edge $109
- 1,2,3 Lead Prioritizer $109

SUCCESSware, Inc.
203 Annandale Drive Cary, NC 27511
Call us (919) 469-0119

CIRCLE 523 ON READER SERVICE CARD

ORGANIZE YOUR OFFICE AND HOME FILING WITH THE "OFFICE FILES MANAGER"



FILE CLERK™ w/manual $89. Home Version $49.
1-800-735-3222 (713) 461-3250
Visa / MC - Money Back Guarantee - $5 s/h
SBS, P.O. Box 802251, Houston, TX, 77280-2251

CIRCLE 507 ON READER SERVICE CARD

EZ-FORMS
- LITE ($59)–ORIGINAL forms processor! Create, fill-in (even pre-printed), print, etc. any form. 320K reqd. With 90+ style sheets.
- EXECUTIVE ($119)–Adds spreadsheet style math, macros, data search/export, mouse support, bigger forms, multi-copy printing, automatic date/time/#, much more... 640K, HD.

Valueware™ demo disks are $10+s/h each. Refundable with full direct purchase.

V/MC/AX/Dis/OK Ref. W1189C
Orders & Brochures Toll Free:
1•800•US EASY X (USA/CDA)
INFO 1-713-280-9900

EZX SoftPublish, 917 Oakgrove Dr.
Suite 101-EPW, Clear Lake City, TX 77058

CIRCLE 589 ON READER SERVICE CARD

LOCATE HARD-TO-FIND SOFTWARE!
ECONOMETRICS - SALES & MARKET FORECASTING - FORECASTING & TIME-SERIES - QUALITY CONTROL - EXPERIMENTAL STATISTICS - BUSINESS STATISTICS - MARKETING STATISTICS - DESCRIPTIVE STATISTICS - MULTIVARIATE ANALYSIS - CLUSTER ANALYSIS - PROJECT PLANNING - DECISION ANALYSIS TECHNIQUES - OPTIMIZATION - BIOMETRICS - REGRESSION - DECISION ANALYSIS TECHNIQUES - LINEAR AND NON-LINEAR PROGRAMMING - RISK & BUSINESS SIMULATIONS - INVENTORY - PARAMETER & TOLERANCE DESIGN - ANOVA - AND MANY OTHERS!

Lionheart produces numerical analysis software of the finest quality. Turn your personal computer into your personal M.B.A. - a keen new, employee at the right price! Gain an edge on the competition!

Prices range from $125 to $145 per title
SEND FOR FREE PRODUCT GUIDE!

Lionheart Press, Inc
PO Box 379, Alburg, VT, 05440
Tel: (514)-933-4918 Fax: (514)-939-3087

CIRCLE 504 ON READER SERVICE CARD

Church Applications

Parish Data System™
Comprehensive census/contribution program. Easy to operate, menu-driven. Family, member, financial info & reports fully integrated. Selective listings, labels; contribution, tuition statements; personalized letters. User can create own reports, letters. Other church programs available. Over 2500 users.
Parish Data Systems, Inc.
3031 W. Northern Ave. #121
Phoenix, AZ 85051
602/247-3341

Church Mgm't Systems
Easy-to-use, flexible & integrated. Network version available. Local representatives & toll-free support back a comprehensive line of Church & School products. 1200+ satisfied Church, School & Government users. Write or call.
The Software Library
3300 Bass Lake Rd.
Brooklyn Center, MN 55429
800/247-8044, 612/566-4212

AGC Church Systems
Interactive modules for church administration since 1981. OFFICIAL system for many denominations. Powerful Query w/word processing & spreadsheet interface. User groups (1,900+ Users). Semi-annual updates, toll-free support, Quik-Train Learning System, help screens, networking. No-risk demo.
AGC Corporation
1001 AGC Drive
Cleveland, TN 37312
800/873-7435, (800/USER HELP)

COMPUBIBLE
1 SECOND SEARCH PROGRAM
- Search for a word or an exact phrase, search for case, punctuation or partial words, all in less than 1 second.
- Possible to view 4 translations on the screen at the same time. KJV, NKJ, NIV, RSV, ASV available.
- Access the Bible, insert verses and find words and phrases using YOUR OWN word processor., (Ram Resident)
- Word list for correct spelling.
- STRONGS Concordance & Hebrew/Greek Dictionaries.
- Search for Strongs numbers, print primary and secondary definitions.

For information, contact: **NASSCO,** P.O. Box 65600-222
Lubbock, TX 79464 800-288-2044 806-866-4223
Visa, MasterCard, American Express, Discover Accepted

CIRCLE 514 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Bible study tools that grow with you.

THE WORD processor
The most comprehensive Family of Products for Bible Study.

Start with VERSE SEARCH including the Bible translation of your choice with Instant Access to any verse. Search for any words or phrases. Separate windows for comparing verses. And much more! Only $99.95

AS YOU GROW, add NIV, RSV, KJV or NKJV text, Greek or Hebrew transliterators or topical cross references, personal commentary, a chronological Bible and chain references. Our memory resident VERSE TYPIST transfers verses to your word processor.

With Thesaurus

Bible Research Systems
1-800-423-1228
2013 Wells Branch Parkway #304 • Austin, Texas 78728
Tech Support (512)251-7541 Postage extra. For IBM, MSDOS, Macintosh.

CIRCLE 598 ON READER SERVICE CARD

CHURCH SOFTWARE

POWER CHURCH PLUS!

Discover for yourself why more churches are choosing **Power Church Plus**® Try out the leading membership and accounting package.

Call today for your **FREE** full-working **DEMO.**

F1 Software
P.O. Box 3096,
Beverly Hills, CA 90212
(213) 854-0865

"church office computing has come of age."
Neil Houk, Church Bytes
October 1988

CIRCLE 562 ON READER SERVICE CARD

ChurchBase

Friendly Software for Friendly Churches! State-of-the-Art! Full program for only $199. Demonstration Program with MiniManual available for $12.50. Pull-down Menus. On-Line Help. Membership Database. Technical Assistance. Automatic Dialing. Tracks Activities, Events, Classes, Visitors, Attendance. Etc. Etc. Etc.!
MeriMac Software
PO Box 51250-152
Pacific Grove, CA 93950
408/649-6018

PLACE YOUR AD IN *The PC World Catalog* TODAY.
800-435-7766
In CA: 800-435-7760

Clip Art

PGG

BONUS OFFER! Over 130 *additional* images FREE!

Colorart™

High quality artwork for desktop presentation and publishing

Volume 1 - Available now!
$120.00 ea.
CA residents add 6.5% / S & H $3

For IBM PC's & Compatibles.

...the best clip art around."
PC World

Colorart™ is professionally drawn, full color artwork designed to make desktop presentations and publications look... *professional.* Each Colorart™ image can be endlessly resized, recolored, and manipulated without loss of quality. Volume 1 contains over 120 images in 3 categories: **People, Places, Things.** Compatible with Windows™applications, Ventura Publisher™, PageMaker™, and most desktop presentation packages.

All software applications are trademarked and copyrighted by their respective publishers. Windows is a trademark of Microsoft Corp. Copyright 1989 PGG

Presentation Graphics Group
Dedicated to improving your image.
270 North Canon Drive Suite 103 · Beverly Hills, CA 90210

800·468·9008
CA 213 277 3050

CIRCLE 550 ON READER SERVICE CARD

Communications

ChipChat for OS/2

Get your computer chips chatting with the rest of the world. ChipChat's state-of-the-art communications software uses OS/2 and Presentation Manager to make file transfers, E-mail, terminal emulations fast and easy. Take full advantage of the 'next generation' features of OS/2. Order ChipChat today!
Cawthon Software Group
24224 Michigan Ave.
Dearborn, MI 48124
313/565-4000.

Construction

Construction Accounting

Comprehensive, affordable software for builders & contractors. Job cost, billing & draws, payables, check writing, purchase orders, discount & retention tracking, all in one package-$795. Reviewed & approved by National Assn. of Home Builders. Also available: General Accounting & Payroll.
Yardi Systems, Inc.
813 Reddick Street
Santa Barbara, CA 93103
805/966-3666

PC-ESTIMATOR

COST ESTIMATING SOFTWARE

Contractors, Remodellers, Estimators, Consultants, A/E's, Do-it-yourselfers

Complete, easy to use, productivity software. System includes manual and full database with built-in material prices and labor rates: Only $89.00. As Shareware, try full software on 2 diskettes with on-disk tutorial: $19.00. IBM and Compatibles. Hard or floppy drives. S&H Add $2.50. Check, MO or COD

CPR, Inc., 3195 Adeline Str., Suite A
Berkeley, CA 94703
(415)654-8338

CIRCLE 444 ON READER SERVICE CARD

Data Entry

Data Entry Emulator

Fast, accurate heads-down data entry & two-pass verification for PCs. Quick/easy formatting. Features include: auto-dup, constants, format chaining, range checks, table lookups, operator stats, a complete edit language inc, Rev 10 key option. Lots more— Free 30 day trial. PC's $395.
COMPUTER KEYES
21929 Makah Rd.
Woodway, WA 98020
800/356-0203, 206/776-6443
fax 206/776-7210

The PC DATA ENTRY SYSTEM

RODE/PC is the highest quality data entry solution available and has been selected as the ultimate data entry solution by the U.S. Bureau of the Census, U.S. Army, U.S. Navy, New York Stock Exchange, General Motors, EDS, Dupont, Exxon, Texaco, Olivetti, and thousands of other large and small businesses, universities, and government agencies.

Full evaluation kits are available. Call us today to discuss your data entry plans.

DPX— *for experience, quality, and service*
490 S. California Ave., Suite 100
Palo Alto, California 94306 415 323 8195

CIRCLE 558 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

KeyEntry III®

Multi-User Data Entry System. A complete data entry system for multiple users running in a LAN, or in a stand-alone environment. Provides all necessary tools for designing data entry applications, controlling data flow, & monitoring/reporting operator activity & performance. Complete evaluation copy (all programs & documentation) avail. Call for your copy today!
Southern Computer Systems, Inc.
2732 Seventh Ave. South
Birmingham, AL 35233
800/533-6879, 205/251-2985

Data Entry/Validation

Accounting	Document Tracking
Payroll	Purchasing
Inventory	Market Research
Order Entry	Human Resources

ENTRYPOINT 90 creates customized applications for any type of system.

- Menu-driven development tools
- Paint-the-screen image editor
- Multiple export options
- Toll-free tech support hotline
- Award-winning manuals

Call today for a **FREE** demo disk and **NEW** Application Catalog.

DATALEX
(800) 962-8888
(415) 362-4466

Desktop Portraits

COMPUTER PORTRAITS BY COMPU-PIX ™

YOUR FAVORITE COLOR PHOTO CONVERTED TO SOFTWARE FOR DISPLAY ON VGA MONITORS

- 256 Color VGA Mode 13H
- Installs on Hard Disk
- One Keystroke Return to DOS

TURNS YOUR BLANK SCREEN INTO A BEAUTIFUL FULL-COLOR COMPUTER DESKTOP PORTRAIT

Specify 3" or 5" diskette
Send 8x10 max photo (will be returned)

$35 TO: COMPU-PIX SYSTEMS CORP
314 EAST HOLLY STREET #106
BELLINGHAM, WA. 98225

Desktop Publishing

YourKey to Windows

Customize your MS-Windows keystroke(s) with YourKey. Define your hot keys for:

- a command on any application
- multiple operations across applications
- number of keystrokes

Price-$30 incl. s&h. 90 days money back guaranteed, check/MO.
Write to:
Kansmen Software
PO Box 391176
Mountain View, CA 94039
415/969-0428

Educational

PC-Quizzer

Courseware Authoring System. Ideal for home & School. Ask Multiple Choice, True/False, Fill-in & K-type questions. Menu driven, Windows, Music, Speech, Color Text & Graphics. 256 colors on PS/2. Many other features. Improve Grades for only $59. A Site license is available. $3 s/h. MC/VISA.
Data Assist
651 Lakeview Plaza Blvd. Suite G
Columbus, Ohio 43085
614/888-8088

Grade Week Vacation!

Average & print your grades with the fast, easy-to-use AEIUS GRADEBOOK V2.5. Won Software Excellence Awards from 3 Edu. Mags in 1988. Free literature. Shareware disk with tutorial only $10 ppd. Register for printed manual and phone support only $35 ppd. VISA/MC, check, MO. 24hr phone recorder.
Aeius Corp.
PO Box 700457
San Jose, CA 95170
408/257-0658

BSc & MS in Comp Sci

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your Bachelor of Science & Master of Science in Computer Science at home. BSc subjects covered are: MS/DOS, BASIC, PASCAL, C, Data File Proc., Data Struct. & Operating systems. MS includes subjects in SW Engineering & AI.
American Inst. for Computer Sciences
1704-WO 11th Ave. So.
Birmingham, AL 35205
Toll Free: 1-800/872-AICS

ERYN's ABC's 3.0

Fun Computer Learning for Kids 2 to 5

- Sing the ABC song and learn the Alphabet, Numbers, and Shapes.
- Play the Electronic "Etch-A-Sketch"* that Prints your designs.
- Makes a perfect gift.

$23 + $3. s/h CA Res 6.5 tax
WORKING COMPUTERS
P.O. Box 91333, Pasadena, CA 91109-1333 (818) 797-1957
*Etch-A-Sketch is a trade mark of Ohio Art

CIRCLE 440 ON READER SERVICE CARD

New Gradebook III!

The software that does it all. Handles 200 students/class, any number of classes. You select grade categories. Calculates course grades. Ranks students. Progress reports. Full screen editing. Excused absences. Drop lowest grade. And much more, $49.50. Demo disk & manual $10; credit to purchase. VISA/MC.
Wren Software, Inc.
PO Box 1138 Dept. W
Castle Rock, CO 80104
303/660-0049

Lotus 1-2-3, DOS and WordPerfect 5.0 are fast and easy to learn!!!

Lotus 1-2-3 (18 hours)..... 79.95
WordPerfect 5 (18 hours).... 79.95
DOS incl. 3.3 (12 hours).....79.95

These disk-based tutorials and work-books are self-contained and highly interactive. Practice software commands right on the computer without worring about mistakes. Study at your own pace. Very user friendly... you control the program with ease. Classroom tested, student approved.

Diskettes (Only)..... $16.00

ECC Learning Systems
PO Box 1575
Bellevue, Washington
98009 (206) 392-9654

CIRCLE 560 ON READER SERVICE CARD

SPANISH ASSISTANT™

Spanish Assistant™ gives your word processor bilingual power! Provides instant access to on-line *Random House*® bilingual dictionaries, over 2,000 completely conjugated verbs, and grammar help.

Includes "Replace Word-for-Word" to translate each word and an easy Accent Entry utility. French, German, and Italian Assistants™ also available.

$49.95 each, plus $3 shipping.

MICROTAC SOFTWARE
4655 Cass Street, Suite 304
San Diego, CA 92109
(800) 366-4170

CIRCLE 471 ON READER SERVICE CARD

MATH EDITING

FOR THE PC

MathEdit lets you put

$$Z=\frac{(\overline{X}_1-\overline{X}_2)-(\mu_1-\mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1}+\frac{\sigma_2^2}{n_2}}}$$

into WordPerfect, TEX, or Manuscript documents
without learning any codes!

- *A display window lets you see your equation as you type it*
- *MathEdit is only $149*

K-TALK COMMUNICATIONS
50 McMillen Ave. Ste. 100
Columbus, OH 43201
(614) 294-3535

CIRCLE 447 ON READER SERVICE CARD

Engineering

Simulation

GPSS/PC is a full-power version of GPSS, the most popular mainframe simulation language. Specifically designed for interactive use on today's high-speed microprocessors, it is loaded with features such as interactive graphics & animation. Using GPSS/PC, predict the behavior of complicated real-world systems.
Minuteman Software
PO Box 171/W
Stow, MA 01775-0171
800/223-1430 x315, 617/897-5662 x315

Eng./Sci. Graphics

Engineering/scientific graphics. *OMNIPLOT [S]* (screen graphics) & *OMNIPLOT [P]* (plotter driver) provide integrated eng./sci. 2D & 3D graphics w/NO PROGRAMMING! Menu-driven, flexible, professional. Choice of formats: tabular/line, contour, 3D wireframe & more! *OMNIPLOT [S]*: $195. Add *[P]*: both $295.
Microcompatibles
301 Prelude Drive
Silver Spring, MD 20901
301/593-0683

CATALOG PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

SIMPLE_1 simulation

SIMPLE_1: a simulation language for PC's integrating graphics, animation & interactive features. No more FORTRAN discrete event routines or antiquated languages. The complete system with editor, on-line documentation, & easy to use concepts allow rapid modeling of your real world problems today!
Sierra Simulations & Software
RR #2 Box 918B
Canaan, NH 03741
800/446-3697, 603/523-9645

Sports Handicapping

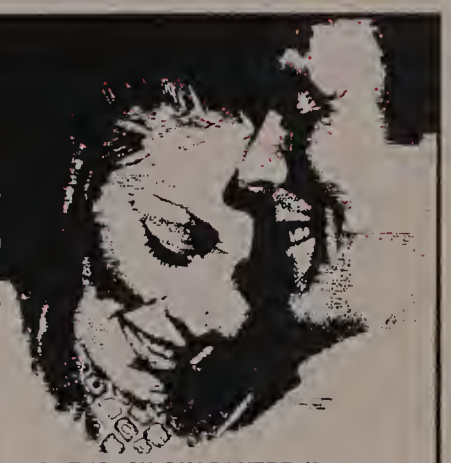
$$WIN with horse racing & greyhound handicapping software-$32.95, $52.95, $67.95, $77.95 each. Up to 17 entries analyzed: class, speed, times, odds, track, post, stretch, & finish. Pro Football, Baseball, Basketball Software-$52.95. Handicap races & games in minutes. MC/VISA accepted. Free info.
SOFTWARE EXCHANGE
PO Box 5382-PW
W. Bloomfield, MI 48033
313/626-7208. Orders: 1-800/527-9467

Entertainment/ Games

STATBOOK SERIES

Features include printing of player/team game, y-t-d & lifetime stats; team/league leaders & team standings. Number of players/teams limited only by disk space. Ideal for high school, college, amateur and professional teams/leagues. Football $79, baseball/softball $69, basketball $59 and hockey/soccer $49. Also league scheduler $55. MC/Visa.
RJL Systems
106 New Haven Ave.
Milford, CT 06460
203/878-0376

THE EASY WAY TO FIND YOUR PERFECT MATE



Now you can use your personal computer to help you find your perfect mate. **LifeMate™** is an amazing program which can give you tremendous insight into your love-life:

- Analyze your personality and reveal what type of person is ideally suited to you.
- Discover how to meet your perfect match. Learn where to go and what to do.
- Quickly determine if a prospective partner has potential by asking just a few simple questions. Avoid heartbreaking affairs.
- Evaluate a new or even an existing relationship so you can objectively decide whether you should continue with it.
- Recognize a *good* love from a *bad* love. Know when to make a romance permanent, and when to look for someone else.

EASY TO USE — Like talking to a friend.

ORDER TODAY — Just $69.95 plus $3.00 shipping and handling. Please add $3.35 tax in AZ. *Indicate whether you are male or female* to be sure you receive correct version (both versions **only $99.90**).

MONEY-BACK GUARANTEE: If you are not satisfied with **LifeMate™** you may return it within 30 days for a full refund.

System requirements: IBM PC, XT, AT, PS/2 or 100% compatible, 256K RAM, two floppy drives OR hard disk, and DOS 2.0+.

LifeMate™ SOFTWARE
LIFEWARE PUBLISHING
#D-6, Box 7450
Phoenix, AZ 85011-7450
(602) 277-0269

THE LOTTO EDGE — HI-TECH LOTTO ANALYZER

Quality Computer-Assisted Number Analyzer

You make your analysis and choose your game-play numbers from computer calculated displays and reports. Data is based on your state's winning number history, using hi-tech statistical methods. You update weekly. Min. 256K. Programs, manual, one state's data, $44.95 + $4.00 shipping and handling. Each additional state $10.95. Credit card: *800/992-4045, ext. 439; (CA) 800/777-8814, ext. 439.* Check/M.O.:

The LOTTO EDGE, ODDS UNLIMITED, P.O. Box 1223, Addison, IL 60101

PLAY TO WIN LET YOUR PC DO THE WORK!

CIRCLE 549 ON READER SERVICE CARD

Casino Excitement!

Centron's MASTER CASINO GAMES bring the fast-paced suspense filled action of casino gambling right to your PC. Centron, the leader in casino gambling software with thousands of satisfied customers, can improve your chances of winning. All games include complete manuals with rules and betting strategies. Beginners learn and play at your own pace without high-speed casino distractions. Experienced players can test strategies and systems without risk. Vivid graphics of game tables on either color or mono systems with 256K memory. Not copy protected.

ROULETTE MASTER	Double 0 or Single 0 Roulette. Animated wheel spin, cursor controlled bet placement. Repeat bets with single entry for faster play.
CRAPSMASTER	Play all casino bets, including multiple Come, Odds, and Place Bets. Selectable casino rules. Feature allows preset betting strategy over a large number of rolls.
POKER MASTER	Exact simulation of casino-style Video Poker. Selectable payoff odds. Optional window shows draw possibilities.
BLACKJACK ACE	Three different card counting systems or design your own. 1-3 players, up to eight decks. Selectable casino rules, advice window. Repeat bets with a single entry.
BACCARAT MASTER	Learn the fast exciting game played by the "high rollers." 1-3 players, unlimited betting. Repeat bets with single entry for faster play.

EACH GAME $39; ALL 5 ONLY $79. Shipping included.
CALL TOLL FREE 1·800·848·2424. MC/VISA/AX

Centron Software, Inc.
7718 LaMirada Drive, Boca Raton, Florida 33433

CIRCLE 538 ON READER SERVICE CARD

Virtual Park

It's as if you're at the track!

Horses...Jockeys...Trainers...Odds... Plus Daily Race Programs with Past Performances and Statistics. Handicap a race or just pick your favorite! One to four players bet on the races, then watch the horses run! PC/MS-DOS 256k color/mono graphics req'd. $35 Check/Money Order. 5-1/4 or 3-1/2.

Virtual Technology
816/333-6641
PO Box 324043, Kansas City, MO 64132

CIRCLE 456 ON READER SERVICE CARD

BEAT LOTTERY BIASES! — LOTTO PICKER 3 (NEW RELEASE)

YOUR LOTTERY IS BIASED! Unintentionally certain number patterns are destined to be selected with a greater frequency than others **LOTTO PICKER 3** will uncover & exploit these biases & tell you which numbers to play - no guesswork required! 4 probability methods, incl. **WHEELING**, analyze past #'s for any Lotto, Pick 3/4 game worldwide! 120-day warranty & free telephone support included. Not copy-protected!

ORDERS 1-800-634-5463 x 293

For MS-DOS machines **$39.95** +($2.55 s/h) 3.5" add $5. Version 2.1 for C64/128 & Apple II.
GE RIDGE 170 B'dwy. #201 PW, NYC 10038
★ Info 718-317-1961. Wheeling not avail in Ver. 2.1. ★
NY residents must add sales tax Write for further info

CIRCLE 584 ON READER SERVICE CARD

Prepare to meet your NEMESIS™

Go has been a way of life in the Orient for over 4,000 years. As much a philosophy as it is a game, Go is considered by many to be the secret of Japanese success.
"the leading Go game for the Macintosh (or ... the IBM PC, for that matter)...Using it is an improvement over learning the game from books or from all but the most patient humans." "This is without question one of the most extraordinary automated aids to go instruction developed." Seiter, MacWorld 6/89

Toyogo, Inc.
(800) 4-TOYOGO
76 Bedford Street, Suite 34-W, Lexington, MA 02173 **(617) 861-0488**
$79 NEMESIS Go Master, **$49** Joseki Tutor, **$59** Tacticat Wizard+ **$6** US S&H

CIRCLE 565 ON READER SERVICE CARD

RACING
Horse/Greyhound

Improve your winnings. Features include:
- Advanced dynamic statistical algorithm that analyzes Time, Positon, Length, Grade & Class
- Self-tuning for optimum accuracy each race
- Entry ranking display - you pick bet
- Developed & Tested on thousands of races
- User-customized database of previous results to increase entry speed and prediction accuracy
- Utility to compute daily Bets & Wins

Don't be fooled by other handicapping programs that don't perform - these have proven successful track records

WIN AT THE TRACK

MC/VISA Accepted
Specify diskette size
Specify horse or greyhound program
Call (800) 727-8949 or send $79.95 to:
JF Designs
Box 12321, Charleston, SC 29412

CIRCLE 443 ON READER SERVICE CARD

Break the Law of Probability

Allow your PC to make money for you. Eliminate chance with the scientific edge.
Play to win with the finest lottery winning software available
Enclose $10.00 plus $2.00 For Handling
(Add $5.00 for a 3.5" Disk)
Send Cash, Check or Money Order to:

AIDA SYSTEMS INC.
P.O. Box 66-PCW, Parlin, New Jersey 08859

CIRCLE 572 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Financial

The Right Time System

The Stock, Index & Futures programs generate accurate Buy/Sell signals for individual stocks, indexes & commodities. The software was developed by an expert portfolio manager for his own personal use & are now available for any smart trader who wants to make quick profits. Call or write for free info.
T.B.S.P., Inc.
620 Avocado Ave.
Corona del Mar, CA 92625
714/548-2874

HAZARDOUS WASTE!

EARN $250K YEAR

- Technology Available For Most Wastes
- No Technological Education Necessary
- Must Have Business Background

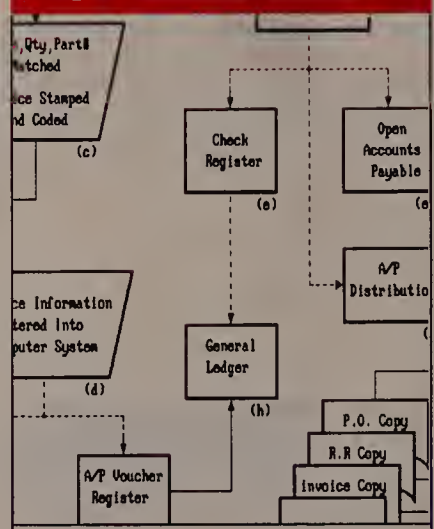
WE PROVIDE

- EPA Recognized Technology
- Complete Training
- Certified Laboratory
- Job Experienced Engineer

MIN. $25K INVESTMENT
(714)848 8416

CIRCLE 425 ON READER SERVICE CARD

ARE YOU STILL DRAWING FLOWCHARTS BY HAND?



FLOW CHARTING II+

Flow Charting II+ will *amaze* you with its speed, power and simplicity.

- Update and print charts as fast as the situation changes
- See your revisions right away—no long wait for charts to be hand drawn
- Select 26 standard shapes; 10 text fonts
- Tutorial manual makes learning easy
- Runs on IBM or compatibles
- Produces excellent organizational charts!
- Only $229!

PATTON & PATTON
Software Corporation
Excellence in charting the flow of ideas

For more information, see your local retailer or call
1-800-525-0082, ext. 50 (outside Calif.)
408-629-5376 (Calif./Int'l.)
81 Great Oaks Blvd., San Jose, CA 95119

CIRCLE 529 ON READER SERVICE CARD

Genealogy

FAMILY REUNION

"Produces one of the most elegant computerized six-generation ancestor charts you'll find anywhere." (PC Magazine)
Tracks relatives: birthday lists, address labels, phone numbers, etc.
"Could easily become the most treasured program on your family's PC." (Selective Software) $49.95/$99.95.
FAMware™
1580 East Dawn Drive
Salt Lake City, UT 84121
800/327-9835, 801/943-6908

Family Roots™

Do it YOUR way! Huge variety & capacity for your family history. Make pedigree charts & descendants charts, group sheets, person sheets, indices, histories, address lables, searches, & much more. Call for FREE information. Satisfaction guaranteed. Any PC or compatible. MC/VISA/AmEx welcome.
QUINSEPT
Box 216
Lexington, MA 02173
800/637-ROOT, 617/641-2930

ROOTS

Genealogy Software to Make *Your* History

ROOTS III (new!).....$250.00
ROOTS II.....195.00

CALL TODAY FOR FREE CATALOG
(800)327-6687
In California, call (415)967-1900

COMMSOFT
2257 Old Middlefield Wy. Mtn View. CA 94043

CIRCLE 505 ON READER SERVICE CARD

Amortizer Plus™

MORE THAN 5000 SOLD!!

Calculate and print complete amortization schedules for any type of loan with this easy to use program. Features include:
• Balloon Payments • Negative Amortization • APR • Rule of 78's • Irregular Payments • Leases • Wrap Notes. "What if" scenarios are quick and easy.
IBM and Compatibles
VISA/ MC/ Amex
$99.95

Good Software Corp.
13601 Preston Rd. Suite 500W
Dallas, Texas 75240
(800) 272-GOOD

CIRCLE 460 ON READER SERVICE CARD

Outrageous Profits!

Exceptional investment software designed by an expert for his own use with only one purpose - to consistently make maximum profits. So good that it has averaged a 79.6% RETURN with 100% ACCURACY since 1985! Easy to use, even for novice traders. Unconditional money back guarantee. $269, MC/VISA/COD.
Strategic Investments
PO Box 4103
Incline Village, NV 89450
702/831-3875

Flow Charting

Legal, Finance, Real Estate

EXEC-AMORT™
Loan Amortizer Plus Software
for IBM-PC,AT,PS2 series & compatibles

- ✻ Used by thousands of Attorneys
- ✻ Used by hundreds of Banks
- ✻ Used by big CPA's
- ✻ Used Nationwide!
- ✻ Used for Judgment/Child Pmt's
- ✻ Used to verify lender's figures!!

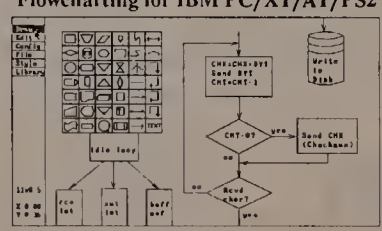
- ❑ Loan Amortizations
- ❑ APR'S comply to US Regulation Z
- ❑ 18 Digit Accuracy
- ❑ Fixed & Adjustable Rates
- ❑ Irregular Payments
- ❑ Points & Fees
- ❑ Prepaid Interest
- ❑ Extra Payments
- ❑ PMI Payments
- ❑ Balloon Payments
- ❑ Solve for the Unknown
- ❑ Present Value
- ❑ Future Value
- ❑ Net Present Value
- ❑ Internal Rate of Return
- ❑ Yield & Loan Price
- ❑ Easy to use menus
- ❑ User configurable rounding
- ❑ Great for client services!
- ❑ FREE Reg. Z compliance benchmark test with purchase!

Only $149.95 + $5 S&H.
Demo disk & manual available for $30+$5 S&H

ELECTROSONICS
36380 Garfield - #1, Fraser, Mich 48026
800/858-8448 or 313/791-0770
Check,Visa,MC, Amex & Discover are welcome.
COD order's additional $2.75
60 day money back guarantee!!

CIRCLE 526 ON READER SERVICE CARD

TurboFlow $69
Flowcharting for IBM PC/XT/AT/PS2



$89 with Logitech Mouse!

- Cut/paste, drag, reduce/enlarge
- Expandable symbol library
- Drawing size to 4 pages
- Pop-up icon menu
- Supports all plotters
- Curves, ellipses

Daytron Electronics Inc. (214)669-2137
610 S. Sherman #104, Richardson Tx 75081

CIRCLE 561 ON READER SERVICE CARD

Better Flowcharter

Know before you buy! ***Easy-Flow*** is the superb flowcharting program chosen by over 30,000 users, and very favorably reviewed in the March 10th 1987 issue of PC MAGAZINE. See the "Advertisers Index" under **HavenTree** to find our large display add in this issue.

HavenTree Software Limited
Order Desk: 1-800-267-0668
Information: (613) 544-6035

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Graphics

- A wide range of professional images for **COREL DRAW!**
- Over 200 Images on Volume 1 at $149 & more to come
- Can be modified skewed, color changed etc...
- Resize images to meet your needs
- All images are vector based therefore device independent

1130 Morrison Dr., Suite 330, Ottawa, Ont K2H 9N6

(613) 820-1000

CIRCLE 421 ON READER SERVICE CARD

3 Free Slides from your PC
COMPUTER SLIDE EXPRESS converts your graphic files into 4000 line full color slides, overheads or printouts. All popular programs supported. 24 hour service by modem or disk. As low as $6.50. Call or FAX for your FREE valuable ($27.00) coupon & FREE 48 page catalog.
Visual Horizons
180 Metro Park
Rochester, NY 14623
Phone: 716/424-5300
FAX: 716/424-5313

FORTRAN Graphics!
Get complete graphics support on screen, printer or plotter. Grafmatic (VGA, Herc.®), Printmatic (printer), Plotmatic (HP, HI plotter) give you 2-D + 3-D graphics support w/MS, Lahey or R/M FORTRAN. Optional font module too! $135 ea. Discount for 2 or more programs. Free demo.
Microcompatibles
301 Prelude Drive
Silver Spring, MD 20901
301/593-0683

GANTT CHARTS

***Milestones, Etc.* ($89)**

- Runs under Microsoft Windows(*)
- Many symbol & connector types
- Merge charts with PageMaker, Ventura Publisher, WordPerfect

*Windows Run-time available FREE!

SoftPro
P.O. Box 1167
Manchaca, TX 78652
(800) 666-3886

CIRCLE 439 ON READER SERVICE CARD

Health

Analyze diets, menus & so much more! This Top-rated software has the best database of any system on the market today. Used by schools-colleges-hospitals-homes-fitness centers & businesses. 2400 foods-30 nutrients. Send for ***FREE DEMO DISK !!***

ESHA Research - PO Box 13028-B
Salem, OR 97309
Phone: (503)-585-6242

CIRCLE 573 ON READER SERVICE CARD

Inventory Control/ Management

"THE COLLECTOR"™
Serving collectors since 1979. Stamp, Coin, Doll, Train, Antique, Gun, you name it, Collectors (and your insurance co.) will love it. Holds up to 225,000 items, all sorted alph/numeric, with cost/cur val at touch of key. For PC/PCjr/XT/AT/PS2 or similar (256k). Write/call for free brochure, or $85 + $3 s/h
The Third Rail
3377 Cimarron Dr.
Santa Ynez, CA 93460
805/688-7370

Mr. QuarterMaster
Providing the IC needs of business, govt. & institution stockrooms since 1983. Features include receipts & issues updating, report generation, issue slip, etc. Price $140. Manual alone with demo: $30 deductible toward later purchase. Also available: Sales reporting, PO, Estimating, Retail IC & Multi-whse IC systems.
RJL Systems
106 New Haven Avenue
Milford, CT 06460
203/878-0376

dFELLER Inventory
A business inventory program written in modifiable dBASE source code. The menu-driven program lets you locate items by inventory name or number. It keeps track of reorder points, vendors, average cost, & other info $150. dFELLER PLUS with Purchase Orders & History $200. Requires *dBASE II* or *III* or *III PLUS*.
Feller Associates
550 CR PPA, Route 3
Ishpeming, MI 49849
906/486-6024

Stock-Master 4.0
This commercial grade, high performance inventory system for Mfgrs has Stock Status Rptg, Trend Analysis, Purchase Order Tracking, QC Rptg, Transaction History Detail Analysis, Multiple Whse Locations, Bill of Materials & Purchase Order Writing. On minis since 1978, expanded/priced for micros. Demo avail.
Applied Micro Business Systems
177-F Riverside Ave.
Newport, CA 92663
714/759-0582

POINT OF SALE INVENTORY PROGRAM

Maintains 10,000 Item Inventory
Prints Sales Tickets on 80 or 40 column Tape Receipt Printer
FAST CUSTOMER CHECKOUT
Integrates to A/R, Mailing List and G/L - Opens Cash Drawer

$89.50

POS with departments $189.00
40 inventory & UPS programs
Cash drawers & receipt printers
Call for complete list
Freeman Software Garland, Tx

800-426-6598

CIRCLE 445 ON READER SERVICE CARD

Laser Fonts

$1.50 FONTS
HP compatible soft fonts for your laser printer. Dozens of type styles, logos, digitized images & custom fonts available.
- Fixed & Proportional
- Portrait & Landscape
- Regular-Bold-Italic-Italic Bold
- Point sizes-6 to 108

For FREE catalog, contact:
EAGLE SYSTEMS
PO Box 502
Moorpark, CA 93021
805/529-6992

Languages

LAHEY FORTRANS

F77L-EM/32—Programs up to 4GB on your 80386
Winner of PC Magazine's Technical Excellence Award '88 — $895*

F77L-EM/16—Programs up to 15MB on your 80286
Winner of PC Magazine's Technical Excellence Award '88 — $695*

F77L—The industry leader. New Version 4.0 includes editor, linker, debugger, profiler, make, graphics, Weitek support — $595

Lahey Personal—The affordable FORTRAN with professional features. Full ANSI 77, debugger, linker, library manager — $95

*Requires $195 DOS Extender

For porting or developing, there is no substitute for a Lahey Compiler. Call (800) 548-4778.

Lahey Computer Systems, PO Box 6091 • Incline Village, NV 89450
Tel: (702) 831-2500 • Fax: (702) 831-8123 • Tlx: 9102401256

CIRCLE 552 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Mailing List Programs

Try FREE-Mail Programs

- Mail-Track-I ($49.95)
- Mail-Track-II ($95)
- Mail-Track-III ($195)
- Mail-Track-II Plus ($195)
- Mail-Track-III Plus ($295)
- Mail-Bulk-Rate-II ($195)
- Mail-Bulk-Rate-III ($295)
- Mail-Second-Class-II ($295)
- Mail-Second-Class-III ($395)
- 30 Day Money Back
- Free Trial Disk
- Free Catalog

Sapana Micro Software
1305 South Rouse–PCWD
Pittsburg, KS 66762
316/231-5023

PostWare for BIG Jobs

Fast, accurate PC software for large volume & commercial mailers. Corrects addresses & assigns ZIP, Carrier Route & ZIP+4 at 81,818 records/hr. Mail stream sorting at 14,690 records/min. USPS certified at over 99% accurate. Calculates postage, prints labels and bag tags. Call for FREE broch.
Postalsoft, Inc.
4439 Mormon Coulee Rd.
La Crosse, WI 54601-8220
608/788-8700, 800/831-MAIL (6245)

"The Mail Order Wizard

is one very powerful program. It offers a catalog business all the computing routines it needs-and then some!...gives new meaning to the hackneyed phrase, 'user friendly'... Written in Assembler, it operates with lightning speed... very serious software, a 'must see.'" *Catalog Age*. $1670. Demo, $20.
The Haven Corporation
802 Madison, Dept. W
Evanston, IL 60202
800/782-8278, 312/869-3434

MR. LISTER™

Dedicated List manager organizes your customer data & automates mailouts. 14 User-Definable fields for Addresses, phone #'s, Codes, etc. Professional looking label printouts; your format. Select by match or range. Merge list with your letters. Sort, Find, Export/Import, Duplicate Eliminator, & more. A real time saver. $89. Demo $15.
Automated Micro
333 Cobalt, Suite 107
Sunnyvale, CA 94086
408-245-0350

Maintenance Management

Maintenance & Inspection

An integrated maintenance management system, including parts inventory, with clients in Fortune 500 companies, utilities, hospitals, schools, manufacturing & service industries etc. The online system provides operational, planning & analytical reports such as work orders, schedules, skill & inventory requirements, budget reports & reports that summarize history of work performed.
Penguin Computer Consultants
PO Box 20485
San Jose, CA 95160
408/997-7703, Fax: 408/927-0570

Turbo Maintenance Mgr

An exceptionally fast, user-friendly, maintenance management system designed to improve productivity through organized planning, scheduling, inventory control & work order processing. Includes the Dirty Dozen™, automatic PM scheduling, PM leveling, employee work load leveling & more.
Owen Engineering & Management Consultants, Inc.
PO Box 27749
Denver, CO 80227
303/969-9393

Manufacturing

MINI MYKE

ENTRY LEVEL MANUFACTURING SYSTEM for make to order, make to stock, process & repetitive mfg. Fully integrated acctg/dist/mfg syst costs $5790. EASY to install & use—expands with options—grows to full MYTE MYKE MRPII system without loss of investment. Avail on PCs, Novell, Xenix, UNIX.
M & D Systems, Inc.
3885 N. Buffalo Rd.
Orchard Park, NY 14127
716/662-6611

MFG. Control System

A comprehensive system for repetitive or job shop type manufacturers consisting of: B/M, Inventory, Order Processing, Purchasing, Mat. Req. Planning MRP, MPS, Shop Floor Ctrl. & CRP, Cost devel., Job & W/O Costing, Accounting. 1 yr. warranty included. Train & consult avail. Compare our system & prices for best value.
Production Systems Inc.
526 South E St.
Santa Rosa, CA 95404
707/526-1294

Medical

Medical Systems with ECS

PPM offers a complt. line of med. SW from simple ins. claims proc. to comprh. A/R mgt.
PC CLAIM PLUS - claims proc. w/ECS to 100+ major ins. carriers - 30 day MB Guar.
THRESHOLD - complete A/R, Pt. Bill, comprh. practice mgt stats.
CLAIM NET - Nationwide elctrnc claims clearinghse transmits to 100+ ins. carriers. SW starts at $459. Dealer inquiries welcome.
Physicians Practice Management
350 E. New York
Indianapolis, IN 46204
800/428-3515, 317/634-8080

Practice Management

MD VersaForm, the most flexible patient accounting and insurance claims pckage. Programmable and fully customizable, includes complete database management system. Customized reports, files, and screens. Full source included. LAN support. Dealers wanted. $995 for single user. Free literature and demo disk.
Applied Software Technology
591 W. Hamilton Ave.
Ste 201 Dept. 86
Campbell, CA 95008
(800) 678-1111 ext 86.

Medical/Dental SW

A comprehensive Medical Billing & Practice Analysis system with ELECTRONIC CLAIMS. MEDICAL & DENTAL Versions. Sophisticated funtionality yet simple, easy to use & learn. SOURCE AVAILABLE to qualified dealers-dBASE III+/CLIPPER. Competitive pricing with VERY HIGH DEALER MARGINS.
Hi-Tech Management Systems
PO Box 4647
Sunland, CA 91041
818/797-1302

Messaging

Are your Whereabouts a mystery to everyone but yourself ?

Whereabouts™

Flash an animated colorful message on your screen:
- Out to Lunch
- Back At...
- In a Meeting
- Call me at Ext...
- Leave me a Note
- Page me
- Please don't use this PC
- Or Create your own Custom Message and more...

$24.95

WITH FADE FEATURE TO PREVENT SCREEN BURNOUT

"A nifty little program"
- PC Computing 3/89

Supports EGA/VGA, CGA & Hercules Mono Video Modes - IBM PC,XT,AT,PS/2 and 100% Compatibles
Add $2.00 for S&H, (MA add 5% TAX)

Within the month of this Magazine, get FREE S&H if you state the time in this ad.

"Mouse Artist" Software
45 Lakeside Ave. Suite 38
Marlboro, MA 01752

VISA MC ☞ **(508) 485-9530**

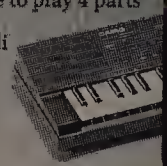
CIRCLE 487 ON READER SERVICE CARD

Music

FINALLY AN AFFORDABLE MIDI STUDIO
$399

includes:
• Keyboard • Interface • Software

The CMS-1 is a complete Midi Studio which includes everything! Keyboard, interface and software. The CMS-401 Interface is Midi compatible with over a 100 music programs.
CMS Enhanced Cakewalk software has the best value for the money. The Casio MT-540 keyboard is able to play 4 parts simultaneously.
If you already own a Midi keyboard, the CMS-401 interface and CMS Enhanced Cakewalk is available for only $249.00



PC MAGAZINE EDITOR'S CHOICE

"Cakewalk beats higher priced sequencers in many functions and is a great package for the money."

Make sure the program you're buying is the actual program that recieved PC Magazine Editor's Choice.

1 800 322 MIDI
COMPUTER MUSIC SUPPLY
382-B N. Lemmon, Walnut, CA 91789.
Tel:714-594-5051
VISA • MC • AMERICAN EXPRESS

CIRCLE 545 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

SongWright IV
Music Processor prints professional sheet music, songs, scores with text, chords, symbols. Compose, edit, copy, record, transcribe, play, transpose to any key. Bass/treble, multiple staves, all meters. MIDI optional. IBM/Epson/Star printers; CGA/Hercules graphics. $89.95. LaserJet+ $30. Send for free sample output.
SongWright Software
Route 1, Box 83
Lovettsville, VA 22080
703/822-9068

FREE SOFTWARE CATALOG

Low as $1.50 / Disk
Over 1000 IBM Software
For fast service
Write to:

SOFTSHOPPE, INC.
P.O. Box 3678
Ann Arbor, MI 48106-3678
(313) 761-7638

CIRCLE 436 ON READER SERVICE CARD

IBM SOFTWARE
99¢ - $1.99
FREE CATALOG
Circle our Reader Service No. or Write, or Call
(501) 750-2332
Adams PC-SOFTWARE
801 Henryetta, Suite 2
Springdale, AR 72764

CIRCLE 493 ON READER SERVICE CARD

IBM SHAREWARE $1.25

VALUE PAC's - Outstanding Software for Less.

#1 GRAPHICS - over 1500 pictures to use with Printmaster, Printshop or 1st Publisher. Only $5

#2 GOLF COURSES for Accolade's Mean-18. Over 40 courses in all. $5 for the 4 disk set.

#3 THE BIBLE - King James Version archived on 8 floppy disks. Only $10.

Add $2 for Shipping & Handling
CA Residents add 6% Sales Tax

Our library contains nearly 600 disks with thousands of programs.
Write for FREE title list.

ORIGINAL SOFTWARE
P.O. Box 8472 • Redlands, CA 92375

CIRCLE 534 ON READER SERVICE CARD

Project Management

$79. Gantt Miracle
PROTRACS offers easy project mgt. at an affordable price. Track 2,000 tasks in every project by responsibility & priority. Produce 6 standard (& unlimited custom) reports, & 4 different Gantt charts in monthly or annual formats. Windows, popups, custom calendar, swift sorting & searching, LAN compatible. Elegant, simple, very fast & only $79.95.
Applied MicroSystems, Inc.
PO Box 832
Roswell, GA 30077
404/475-0832,
800/622-4070 orders only

QUALITY IBM SOFTWARE

Get the most out of your computer with specially selected programs for home and business use: Games, Children's Education, Accounting, Finance, Graphics, much more. FREE bonus disks. VISA and MC

FREE CATALOG
1-800-274-4587

HOMEFRONT SOFTWARE
2976 Farwest
Medford, OR 97501

CIRCLE 429 ON READER SERVICE CARD

PEOPLE'S CHOICE

BEST VALUE
Shareware/Public-Domain
Programs less than 70 cents/each!
People's Choice offers over 2200 programs, packed onto just over 400 diskettes!
Because each disk is just $3.75, your average cost per program is *less than 70 cents !!!*
WHAT A SELECTION! ---
☞ *Games* ☞ *Accounting* ☞ *Database Systems.*
☞ *Personal Finance* ☞ *Programming Languages*
☞ *Utilities (Disk, Printer, Screen, etc)*
and MUCH, MUCH more !!! Call for FREE CATALOG!
People's Choice
P.O. Box 171134-W
Memphis, TN 38187
1-800-999-0471 (entire U.S., Canada, Puerto Rico, Virgin Islands)
1-901-763-0471

CIRCLE 430 ON READER SERVICE CARD

Public Domain/ Shareware

FREE IBM Software Catalogue
SHAREWARE FROM $1 PER DISK
Shareware may require payment to author if found useful
SOFSOURCE
P.O. BOX 828
EAST LANSING, MI 48826
Association of Shareware Professionals Approved Vendor
REALLY SAVE! CALL TODAY!
1-800-338-2118

CIRCLE 466 ON READER SERVICE CARD

PUBLIC DOMAIN/SHAREWARE
FREE CATALOG
GREAT PROGRAMS
ON 5.25" & 3.5" FORMATS
AS LOW AS $1.40 PER DISK
BUY TEN, GET TWO FREE
NO MINIMUM ORDER
WRITE TO:
JANE SOFTWARE
721 S.CARPENTER ST.
CHICAGO, IL 60607

CIRCLE 500 ON READER SERVICE CARD

$1.50 PER DISK!
[Buy 1 or 100]
Best IBM Shareware and Public Domain SOFTWARE

FREE CATALOG
(203) 745-5322
BRIGHT FUTURES INCORPORATED
P.O. Box 1030, East Windsor, CT 06088

CIRCLE 453 ON READER SERVICE CARD

FREE SOFTWARE
TOP 10 IBM SOFTWARE
• 10 disk set - latest versions
PC Write, PC Calc+, TreeView
DanCad, File Express, Moraff's Revenge, HGCIBM, Novatron, Home Base, Spacewars, plus our 1600+ disk catalog
PAY ONLY $5.00 S/H
• Visa/MC/Amex/Check
International Software Library
511 Encinitas Blvd. Ste 104
Encinitas, CA. 92024
CALL 800 669-2669
limited introductory offer

CIRCLE 420 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

FREE IBM CATALOG
72 PAGES!
Software, Ribbons, Labels, Books, Etc.

Best Bits & Bytes
P.O. Box 8225-W
Van Nuys, CA 91409

CALL NOW!
TOLL FREE-24 HRS.
1-800-245-BYTE

CIRCLE 576 ON READER SERVICE CARD

shareware for IBM

- GAMES
- EDUCATION
- BUSINESS
- GRAPHICS
- VGA DEMOS
- UTILITIES
- CAD
- HAM
- ELECTONICS
- SECURITY
- LABELS
- FORMS
- TRAVEL
- AUDIO/VIDEO
- CHARTS
- ATHLETICS
- GENEALOGY
- RELIGION
- MAILING LISTS
- LEGAL
- MEDICAL
- LOANS
- DATABASE
- SPREADSHEET

FREE CATALOG
Call 1-800-777-5636
CWI Information Services
PO BOX 4851, Anaheim, CA 92803

CIRCLE 525 ON READER SERVICE CARD

FREE! Software Catalog

PUBLIC DOMAIN / SHAREWARE PROGRAMS Other vendors distributing shareware charge you for just one program. For $3.00 we give you a FULL DISK of programs ($2.50 per disk if you buy more than 10)! No minimum order. On the average, we give you more software for the money. We want to be your SHAREWARE CONNECTION. Our comprehensive catalog describes 400 diskettes loaded with quality software. Accounting, Communications, Database Managers, Games, Utilities, Word Processors, and much more. There's something for everyone, from the serious programmer to preschoolers! Send for a free copy of our catalog.

Phoenix Computer Services
P.O. Box 4129
Linden, New Jersey 07036

CIRCLE 489 ON READER SERVICE CARD

MegaBytes-Not MegaBucks!
Latest Versions of Virus-Free Software

25 Megabytes $39
50 Megabytes $69
75 Megabytes $99
100 Megabytes $129
125 Megabytes $159
150 Megabytes $189
175 Megabytes $219
200 Megabytes $249

Why get one program per disk when you get HUNOREOS of quality programs per order from the GREATEST SHAREWARE AUTHORS IN AMERICA from Share-Net? 1 2MB or 1 44MB disks Add $2 00 postage & handling for each 25MB increment Okla residents add 7% sales tax Write or call for FREE CATALOG DISK with latest LHARC Compression Utility from Japan

24 HOUR ORDER LINE
1-800-876-8496
SHARE NET
Tech. Assistance/Info (405) 524-7489
POB 12368, Dept. I •Okla. City, OK 73157

CIRCLE 511 ON READER SERVICE CARD

Real Estate

• Property Mgt Plus/89 •
New version which looks up tenants & posts rent by Tenant Name. Prints.. Bank Deposit Slips, Rent Statements, & Automatic Checks. Reports.. Late Rents, Vacancies & Expired Leases. Posts Management Fees, Pays Owners & does 1099s. Saves up to 80% of accounting time & is the EASIEST system to use! Special pricing from $575.
Realty Software
133 Paseo de Granada
Redondo Beach, CA 90277
213/372-9419

Property Managers
Easy-to-use software:
• Rental Manager — general purpose accting for apartments, storage units, etc. Built-in gen. ledger.
• Condo Manager — for community associations. Member payments & charges. Accounting reports.
• Resort Manager — for units rented on behalf of many owners. Timeshare, reservations, statements.
Coleman Business Systems
3654 Arcadian Drive
Castro Valley, CA 94546
415/581-7125

Property Management
Comprehensive software for managing residential, commercial, condos & more. Three versions: Basic PM for owner/manager-$495, Deluxe PM for professional management-$1,195, Multi-User with Novell network compatibility-$2,395. Includes check writing, recurring expenses, G/L, management reporting.
Yardi Systems, Inc.
813 Reddick Street
Santa Barbara, CA 93103
805/966-3666

Property Management
Since 1978 over 7,000 users of our software have found it comprehensive, flexible & easy to use. We offer systems to manage the following types of properties: COMMERCIAL/RESIDENTIAL/CONDOMINIUM/HOME OWNERS ASSOC./MINI-STORAGE FACILITIES. For more information & sample printouts call:
Realty Automation, Inc.
11365 Eastshore Drive
Hayden Lake, ID 83835
208-772-3259

Real Estate Ad Writing
NewsAd™ programs analyze the property, write, size, store, cost-out residential ads in minutes. Cut ad costs, increase ad responses, free your time selling. Choice of formats. Designed by experts. NewsAd programs from $199 - $395. Visa or MC. 30-day money back guarantee. Call toll free for information.
AdWriter, Inc.
Box 760 520 Warren Street
Sandusky, OH 44870
1-800/262-2623

Property Management
Full-featured, easy-to-use property management software. Programs provide features that exceed or are comparable to packages costing 10 times as much. The Landlord Plus manages up to 10 properties--$295.The Landlord Plus II manages up to 100 properties–$595. Call to order or to receive info.
Systems Plus, Inc.
500 Clyde Avenue
Mountain View, CA 94043
800/222-7701, 800/222-7707 in CA

Scheduling

Schedule Master

SCHEDULE WORK & APPOINTMENTS
- For scheduling maintenance of equipment & vehicles, and for all maintenance intensive functions.
- Schedule events, work in progress, appointments, customer accounts.
- Generate printouts, work-orders, to-do lists, history.
- Monthly calendar highlights key days
- Flexible and easy to use, with on line manual.

ONLY $89.95 PLUS $3 FOR S & H
DEALER INQUIRIES WELCOME

PRAXIS SOFTWARE COMPANY
P.O BOX 19466 PORTLAND OR 97219
CALL 1-800-777-2947

CIRCLE 418 ON READER SERVICE CARD

Security

HANDS OFF THE PROGRAM®
PC SECURITY

OPERATING SYSTEM SECURITY
- Secures subdirectories, files, printers and floppies
- Keyboard lock—automatic or manual
- Log PC boot, program exec, file opens, login/logouts
- Prevents DOS FORMAT and most viruses
- Drive A: Boot Protection/Hard Disk Lock
- IBM PC or 100% compatible—DOS V3.0+

Price **$89.95**
add 3.75—shipping/handling.
Check, Money Order, VISA, MC accepted

Systems Consulting Inc.
412-963-1624
PO Box 111209, Pittsburgh, PA 15238

CIRCLE 567 ON READER SERVICE CARD

EVERLOCK

COPY PROTECTION

Designed for clone compatibility & strength
- Thwarts ALL Bit-copy Software
- Protect any COM/EXE w/o Source changes
- Shut down Debug Tracing & Disassemblers
- Supports all Hard & floppy Disk formats
- Restrict or allow Network Installs
- Limit program use by Date or #Executes
- Remotely reset Installs, Date or #Executes
- No damaged media or I/O plugs

For IBM & clones–$195 & up–Free Info & Demo

AZ **Az-Tech Software, Inc.**
305 East Franklin
Richmond, MO 64085
(800) 227-0644 (816) 776-2700
FAX (816) 776-8398

CIRCLE 593 ON READER SERVICE CARD

Sports

the GOLF Handicapper

Copyright 1989 Carnegie Computer Corporation
P.O. Box 16343 • Pittsburgh, PA 15242 • (412)276-8358

- Follows the USGA method of determining Handicap Indices and Handicaps.
- Prints several reports.including Player List. Course List. each individual player's Handicap index Work Sheet. each individual player's Handicap on each course. and every player's Handicap on every course.
- With a 256K machine.over 180 players and 200 golf courses can be entered.
- Allows sorting of player list alphabetically by name.Handicap Index from lowest to highest. and alphabetically by sex.
- Multiple course and tee options (9 or 18 holes).
- Requires IBM PC/XT/AT or compatable.

$79.95
For a sample demonstration diskette, send $5.00 check or money order. Plus $2.75 P&H

CIRCLE 594 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

Statistics

NCSS-5.0
ALL NEW spreadsheet style. Multiple & stepwise regression, ANOVA, time series, discriminant, factor, cluster, principal components, t-tests, contingency table, nonparametrics. Easy interface to Lotus, *dBASE*, etc. Sort, join, merge data base. $99. Visa/MC.
NCSS-PC
865 East 400 North
Kaysville, UT 84037
801/546-0445

StatPlan IV
Only $179. Easiest to use statistics program available. Statistics include: curve fitting, crosstabs, correlation, multiple regression, stepwise regression, ANOVA, t-tests, time-series analysis, etc. Graphics with printer/plotter output. Handles up to 30,000 data points. Interfaces directly with Lotus and ASCII files. Demo $10.
The Futures Group
76 Eastern Boulevard
Glastonbury, CT 06033
203/633-3501

Forecasting is EASY
with PRO*CAST 2.0. All you need to know is your past history. Complete time series analysis from linear trend to Box-Jenkins. Auto/manual modes. Built-in editor. Reads .WKS & ASCII. Great graphics! Not copy protected. $295 with 30-day money back guarantee. Demo $10.
Fleming Software
PO Box 528
Oakton, VA 22124
703/591-6451

NEW VERSION **StatPac Gold**

The Right Choice For Statistics And Forecasting
- Easy to learn
- Simple to use
- Fast, accurate, versatile
- Windows and graphics

Call now for a free brochure
1-800-328-4907

WALONICK ASSOCIATES
The PC Statistics Pros
6500 Nicollet Ave. S., Minneapolis, MN 55423
(612) 866-9022

CIRCLE 537 ON READER SERVICE CARD

High performance STATISTICAL SYSTEM

Limited time price $149.

STATS+

A powerful, elegant, and super-fast statistical package integrated with complete data management and dynamic graphs. Comprehensive selection of descriptive, inferential, and exploratory statistics with forecasting. STATS+ features intelligent, two-way interfaces to data from Lotus, Symphony, dBIII+, and other programs. **For more info look for our ads in most computer journals, ask your dealer, or contact StatSoft.** Price $245 (+$5 ship/handl).

StatSoft
2325 E. 13th St., Tulsa, OK 74104
(918) 583-4149

Overseas offices: **StatSoft of Europe** (Hamburg, FRG), ph.: 040/4200347; **StatSoft UK** (London, UK), ph.: 07072 71166; **Hearne Software** (Melbourne, Australia), ph.: 613-497-4276

CIRCLE 520 ON READER SERVICE CARD

Go SOLO 3.0

Statistics plus excellent graphics
In an easy-to-use PC package
For business, research, students
From the leader in statistical software for over 25 years
$199 complete with graphics
Satisfaction guaranteed!
Call today • VISA or Mastercard

BMDP
STATISTICAL SOFTWARE
1440 Sepulveda Blvd • Suite 316
Los Angeles, CA 90025
(213) 479-7799 • Fax (213) 312-0161

CIRCLE 488 ON READER SERVICE CARD

Confused?

Don't know which statistical program to buy? Ask for our free "Guide to Buying Statistics Software." It will help you analyze software and match features to your needs. We'll also send free info about the newest release of ABSTAT (version 6), used by over 10,000 analysts, professors, researchers and managers in business, education and government. It has the most used statistical functions without the complexities needed only by advanced statisticians.

AndersonBell Corp.
P.O. Box 648-234B
Parker CO 80134-9909
303-841-9755, ext. 234B

CIRCLE 591 ON READER SERVICE CARD

Surveys

The Survey System
A complete, easy-to-learn package for the entry, editing, processing & presentation of questionnaire data. Produces banner format crosstabs & related tables, statistics (incl. regression) & bar charts. Also codes & reports open-ends. All reports are camera-ready. CRT interviewing option available.
Creative Research Systems
15 Lone Oak Ctr., Dept. W
Petaluma, CA 94952
707/765-1001

MINITAB'S a PC of cake!

MINITAB features intuitive commands for comprehensive data analysis. Includes basic statistics • regression • time series • tabulation • ANOVA • plots • histograms • much more. DOS based version includes LOTUS interface, hi-res graphics, no copy protection. Used in over 60% of Fortune 50 companies. For free brochure call 814/238-3280.

MINITAB
STATISTICAL SOFTWARE
Minitab, Inc.
3081 Enterprise Dr., State College, PA 16801

CIRCLE 566 ON READER SERVICE CARD

GRAPHICS **Forecast Plus™**

"So logical that it could serve as a model for designing forecasting tools."
PC Magazine

- Complete data manager
- 6 exploratory techniques
- 13 forecasting methods

Call now for a free brochure
1-800-328-4907

WALONICK ASSOCIATES
The PC Statistics Pros
6500 Nicollet Ave. S., Minneapolis, MN 55423
(612) 866-9022

CIRCLE 451 ON READER SERVICE CARD

Taxes

W2 & 1099 Software
Consistently judged the best! W2 & ALL 1099's in one program. Creates diskettes in IRS format. Easy to learn & use. Keyboard input or import dBASE, LOTUS, ASCII, & others. Many reports! Adjustable print positioning. Use any forms or plain paper. Supports all printers. Free phone support. $129.
Newport Wave Software
10 Savannah
Irvine, CA 92720
714/544-1099

1099's-ON-DISK
Our fourth year helping you meet IRS regs to file 1099's on magnetic media. Use your IBM-compatible PC's to prepare 5¼" diskette, print forms & reports. For all 1099's, 1098, 5498, W-2G. Fast, easy to learn & use, manual included. Not copy protected. Only $69 plus $3 shipping, MC/VISA accepted. We also supply forms at money-saving prices.
Custom Craft Software, Inc.
5730 R. St.
Lincoln, NE 68505
402/464-3184

NEW

STATISTIX™ 3.0
- Superb Data Management
- Range & Depth of Statistics
- Excellent Manual
- FAST FREE Support

STATISTIX is a Snap!

Buy the best for 1/3 the price of the competition.

PC MAGAZINE EDITORS' CHOICE

Call 612-631-2852 Today
No Risk Money Back Guarantee
Analytical Software
Box 13204, St. Paul, MN 55113

CIRCLE 586 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop *The PC World Catalog* for fast solutions to your PC needs.

TaxEase® SYSTEM
TAX PREPARATION SOFTWARE

FEDERAL & STATE RETURNS on a single disk. Easy to use. Calculates automatically, performs complex "what-if" options, prints IRS approved forms. Available for 25 states. Requires Lotus 1-2-3 or compatible spreadsheet. Standard Program: $79 Professional Program: $139 Corp, S-Corp, Partnership, Fiduciary, Employer's Rtn: $149 ea. Tax Planner $79, Financial Planner $179.
M/C, Visa. Add $4 S&H
Available From
Park Technologies
P.O. Box 1317 Clifton Park, NY 12065
518/877-5881 or 800/423-3189 outside NY

CIRCLE 459 ON READER SERVICE CARD

Utilities

Opt-Tech Sort/Merge 4.0

Extremely fast Sort/Merge program. Run as a DOS command or CALL as a subroutine. Unlimited filesizes, most languages, datatypes & filetypes supported including Btrieve & dBASE. Advanced features include record selection, record reformatting & much more! Call or write for more info. MS-DOS $149, OS/2, Xenix, Unix $249.
Opt-Tech Data Processing
PO Box 678
Zephyr Cove, NV 89448
702/588-3737

COMMANDO SERIES

"Your Best Defense Against A Hostile DOS"

FILE COMMANDO II

- Full Featured DOS Shell
- Single screen view of Dir Tree with disk, file, dir statistics
- View / map disk techincal info Multiple viewing options for file environment
- Copy, Delete, Edit, Move
- Print, Rename file
- Built-in editor or auto link to external editor
- Unlimited users

MENU COMMANDO

- Powerful Access Control Program
- Usage accounting functions by user, program, department
- Multiple level security codes
- Unlimited menu screens
- Easy set up from Dir Tree structure
- Password Protection

Programs utilize point and shoot and single keystroke technology Generous trade in allowance for users of ANY DOS utility

To order call 1-800-833-4400 or send
69.95 for File Commando II, **49.95** for Menu Commando or **89.95** for combined
(add 4.00 for shipping and handling) to:

Progressive Solutions, Inc. 131 Washington St. Lodi NJ 07644
30 day money back guarantee if not completely satisfied

CIRCLE 509 ON READER SERVICE CARD

BREAK 640K!

Why buy expensive boards? VRAM™ gives your PC/XT/AT or PS/2 8 megabytes of memory by turning disk space into expanded memory! Use extended memory for expanded memory. Create VERY LARGE worksheets. FAST. Automatic. Easy to use. 640K not required. Money back guarantee. $49 + $3 s/h.
Biologic
11982 Coverstone Cir./Suite 1622
Manassas, VA 22110
703/368-2949 (fax 703/361-8251)

Ammunition to conquer your biggest problems!

- The Virtual Expanded Memory Manager provides your EMS applications with up to thirty-two megabytes of LIM EMS 4.0 expanded memory.
- It turns PC/AT or PS/2 extended memory into expanded memory.
- It turns hard disk storage into expanded memory.
- It's compatible with most EMS applications, including 1-2-3.
- *Only $89.95. 30-day money-back guarantee.*

PC MAGAZINE EDITOR'S CHOICE

V-EMM™
Fort's Software
P. O. Box 1295
Loveland, CO 80539
(303) 663-5629

CIRCLE 551 ON READER SERVICE CARD

The EDitor by Blue Jay

Powerful & flexible the EDitor offers an ASCII text editing capability normally found only on main frame of minicomputers. Comprehensive 60 page manual. Developed for the professional or beginning programmer using a PC, XT, AT or equivalent. A solid value at only $74.95 (US), available from:
Blue Jay Systems
PO Box 608
Mount Vision, NY 13810
607/293-8007

To-Do List Master™
NEW! POP-UP OPTION!

- ☐ 9 Priorities/26 Categories
- ☐ Multiple Sorts ☐ Edit ☐ Print
- ☐ Archive or daily carryover
- ☐ Color/Mono ☐ DOS 2.1 & higher
- ☐ $49.95 US & CAN (CA add tax)

COMING!

CALENDAR MASTER™
Dimensional Zoom Views

Dealer Inquiries Invited
Software Marketing Enterprises Inc.
SME • PO Box 2965 • Vista, CA 92083
(619) 758-2580

CIRCLE 528 ON READER SERVICE CARD

DIRECT ACCESS™

Direct Access to All Your Software

- ▲ Organize all your programs on hard disk with user-defined menu system.
- ▲ Access any program or command with a single keystroke.
- ▲ No need to learn complex DOS commands.
- ▲ Usage tracking provides reports on all software usage.
- ▲ Customize passwords for security of any sub-menu or application.
- ▲ Toll-free technical support.
- ▲ A PC Magazine "Editor's Choice" program.

SUGGESTED RETAIL $89.95 Plus Shipping & Handling
CALL 1-800-242-6368
FOR THE DEALER NEAREST YOU.

DELTA TECHNOLOGY INTERNATIONAL
1621 WESTGATE ROAD
EAU CLAIRE, WI 54703

CIRCLE 530 ON READER SERVICE CARD

EZ-COPY

...PLUS ™ • The Ultimate Diskette Duplicator for your own PC!
• 2x+ faster than DOS • Quickly & accurately mass duplicate 5.25" & 3.5" disks on your own PC/XT/AT/etc.© • Formats, copies, verifies, optionally serializes, in 1 smooth operation. • DOS 3+, 640K, HD reqd. • Also saves images to HD, speed optimize, more... • Replaces dedicated hardware worth $1000s. — For Only $199+s/h

V/MC/AX/Dis/OK Ref. W1189E
Orders & Brochures Toll Free:
1•800•US EASY X (USA/CDA)
INFO 1-713-280-9900
EZX SoftPublish, 917 Oakgrove Dr.
Suite 101-CPW, Clear Lake City, TX 77058

CIRCLE 548 ON READER SERVICE CARD

Word Processing

PC-Write 3.0 - NEW!

Fast, full featured. Easy to use, optional menus. Edits large files & multiple columns. With spell check, mailmerge, & more. Supports 500 printers. Software, guide, & tutorial on disk: $19. Try it, then register & get manual, support, newsletter, & 2 updates: $99. 90 day guarantee. Visa/MC
Quicksoft, Inc.
219 First Ave. N. #224-PWOC
Seattle, WA 98109
206/282-0452, 800/888-8088

Training

Learn to use your Computer and Software on Video

Educator approved video learning courseware for popular software applications.
DOS, Lotus, WordPerfect, WordStar, dBaseIII+ & IV, Symphony, DisplayWrite, MultiMate & many more.
1 hour beginning level instruction
$29.95 to $34.95
Complete video courses, beginning through advanced applications
$129.95 to $199.95

MeecoAmerica, Ltd.
828 Delphia Avenue
Elk Grove Village, IL 60007
312/981-8838 1-800/234-3490
MasterCard VISA

CIRCLE 559 ON READER SERVICE CARD

How can you be sure which PC business software will meet your specific needs?

Now you can know for sure which is the best buy for you with the unique comparative ratings resource, ***Software Digest***. Chosen as PC World's official testing facility, NSTL publishes this single most trusted source for impartial systematic evaluations of IBM-compatible PC software.

EXCLUSIVE REPORT
from NSTL (National Software Testing Laboratories) - the official research facility of PC WORLD

Your ultimate PC software reference tool.

Software Digest has pioneered an exclusive methodology for evaluating software. Combining technical testing with "hands-on" use by all experience levels, each program is measured for ease of learning, ease of use, quality, versatility, performance and more. The result provides you with an absolutely unparalleled set of comparative ratings for every major IBM-compatible PC business application.

Software Digest's graphic format provides you with test results that are clear, readable and accessible. You can see instantly how competing programs stack up against each other. *Everything you need to know is in this one reliable resource designed to help you improve your product selection decisions.*

What others are saying about Software Digest:

"Software Digest is the 'Consumer Reports' of software."
Richard Concaildi
Dearborn Chemical Co., Lake Zurich, IL

"Software Digest is the one true source of unbiased evaluations. Ratings are comprehensive, factual and easily understood. Simplifies the selection process and reduces the time it takes."
L.J. Callaghan
Nabisco, Hanover, NJ

"Good cost comparisons! Our accounting group was going to buy a $1,500 financial planning package. Your evaluations showed them a better package for only $875."
Tim Belt
Kenworth Truck Co., Chillicothe, OH

Here's what you get when you subscribe:

Software Digest Ratings Report. Each 60-plus page report focuses on a different group of competing business software covering every major PC category.

A timely ***Buyer's Alert*** supplement including program enhancements, performance test updates, previews of new products, and industry alerts.

An indepth ***Cumulative Index***, giving you instant access to tested programs. Listed alphabetically by program, this index includes the issue number of the report, the version tested, pricing, release dates and detailed update information of new versions not available during the testing cycle.

A sturdy ***Three-Ring-Binder*** imprinted with the Software Digest logo and filled with special topic dividers to store and create a complete reference library.

Circle 190 on reader service card

Introductory Risk-Free Trial Offer

■ See for yourself, risk free. Give us the word and we'll begin an *introductory trial subscription*. With stakes as high as they are today, just one correct software acquisition decision (or a wrong one you avoid!) could repay the cost many times over. In short, ***Software Digest*** can save you time, money, and hassles.

Mail this coupon to take advantage of this introductory risk-free trial or call the toll-free number

1-800-223-7093
in PA: 215-941-9600

National Software Testing Laboratories
Box 1000, Plymouth Meeting, PA 19462

☐ YES, begin my **no-risk introductory trial subscription** (6 issues $195.) to ***Software Digest***, on a 30-day examination basis. I will receive a binder with the current issue. If I'm dissatisfied, I have the right to cancel within 30 days, and owe nothing. The binder and preview issue are mine to keep.

☐ Payment enclosed ☐ Bill Me
☐ Charge my credit card:
☐ MasterCard ☐ VISA ☐ Am.Ex.

Account No. _____

Expiration Date _____

Signature _____

Name _____

Title/Dept. _____

Company _____

Address _____

City _____

State _____ Zip _____

Phone _____

CH32M9

National Software Testing Laboratories, Box 1000, Plymouth Meeting, PA 19462

Advertiser Index A to Z

Get more information—circle the appropriate number on the reader service card.

Reader Service Number		Page Number
—	AT&T Computer Systems	41-48
3	Activision	245
5	Advanced Matrix Technology	255
8	Aldus	34-35
4	Altima Systems, Inc.	217
29	Amdek	143
306	American Small Business Computers	126
77	Applied Creative Technology	85
—	Arlington Computer Products	300-301
—	Ashton-Tate	95
20	askSAM	53
302	ATI Technologies	139
22	ATI Technologies	213
10	Barcode Industries	236
1	Blackship Computers	254
—	Bloc Publishing	36
—	Bloc Publishing	40
15	Brother International	197
24	Bulldog Computer Products	305
55	Canon USA	102-103
262	Chipsoft	105
27	Chuck Atkinson Programs	248
38	Clarion Software	228
59	Complete PC, The	54-55
—	CompuAdd	76-77
40	Compuserve	205
39	Computer Accessories	38-39
46	Computer Aided Management	189
45	Computer Associates	33
213	Computer Direct	306-307
200	Computer Discount Warehouse	295
181	Concentric Data Systems	140
16	Corel Systems Corp.	219
50	CPU	288
62	Cuesta Systems	64
—	Curtis Manufacturing Co.	C6
—	DAC Software	97
279	Datastorm Technologies	258
57	DCA/Crosstalk	176
74	Dell Computer Corp.	C2-4, P1
318	Dell Computer Corp.	169
328	Delrina Technology, Inc.	110-111
304	Digi-Fonts	256
—	EasySoft, Inc.	5-7
80	Elite Microsystems	20-21
—	Epson	98-99
78	Everex	24-25
240	Fast Micro	286-287
71	Fifth Generation Systems	131
227	Gateway 2000	50-51
—	GE Info Systems	225
96	Genius Mouse/KYE	58
122	Great Western Electronics	289
79	Haventree Software	26
107	hDC	179
83	Hercules	109
87	Hewlett-Packard	30-31
88	Hewlett-Packard	56-57
113	Hyundai	86-87
—	IBM	10-11, 129
149	Kansai Int'l	113
148	KAO Corp.	243
41	Kenosha Computer Center	304
108	KeyTronic	28
150	Laser Computer, Inc.	257
—	Linotype	73
—	Lotus	62-63
—	L.A. Trade	289
183	Macola	60
161	Map Info	52
147	Matrix Software	101
186	Meca Ventures	235
217	Merritt Computer Products	256
134	Microbiz	294
173	Microcom	166
—	Micrografx	18
—	Microsoft	172, 180-181, 215
163	Mighty Micro	292
—	Money Magazine	207
—	Montgomery Grant	296
160	Multi Micro	157
193	Nantucket	250
63	Natural Microsystems	32
182	NEC Home Electronics	106-107
—	NEC Home Electronics	65-68
312	NEC Home Electronics	80-81
164	NEC Home Electronics	83
—	NEC Information Systems	71
—	NeXT	16-17
190	NSTL	281
191	NSTL	247
196	NSTL	259
199	OCR Systems	15
218	Pacific Computer, Inc.	285
319	Pacific Data Products	158
130	Parsons Technology	198-199
229	Passport Designs	246
230	Paul Mace Software	226-227
—	PC Connection	146-151
152	PC Designs	93
144	Peachtree Software	239
232	Personics	27
91	Peter Norton	221
238	Power Up Software Corp.	211
221	Princeton Graphics Systems	12
224	Printers Plus	303
231	Priority One Electronics	C5
233	Proximity Technology	248
—	Quarterdeck	186
241	Reasonable Solutions	297
282	Reference Software	231
226	RightSoft	145
125	RP Systems	293
220	Samna	185
255	Sampo	171
31	Secure-It	246
250	Sharp	22
236	SoftKlone	94
274	Software Publishing	59
—	Software Spectrum	237
—	Sony	249
252	SPSS Inc.	240
207	Swan Technology/TCP	125
264	Tandy/Radio Shack	223
178	Telemart	302
260	Timeworks	23
—	TOPS	9
285	Toshiba	114-115
284	Ultra-Comp	290-291
—	United Computer Express	289
286	USA Flex	298-299
325	Western Telematic, Inc.	37
296	White Crane	238
253	Xerox	165
283	Xerox Imaging Systems	90-91

Advertiser Index by Product Category

Get more information—circle the appropriate number on the reader service card.

Reader Service Number		Page Number
	HARDWARE	
	Boards/Cards/Chips	
302	ATI Technologies	139
83	Hercules	109
164	NEC Home Electronics	83
	Communications	
22	ATI Technologies	213
59	Complete PC, The	54-55
63	Natural Microsystems	32
	Computers	
—	AT&T Computer Systems	41-48
4	Altima Systems, Inc.	217
1	Blackship Computers	254
—	CompuAdd	76-77
50	CPU	288
74	Dell Computer Corp.	C2-4, P1
318	Dell Computer Corp.	169
—	Epson	98-99
78	Everex	24-25
240	Fast Micro	286-287
113	Hyundai	86-87
—	IBM	10-11
150	Laser Computer, Inc.	257
160	Multi Micro	157
182	NEC Home Electronics	106-107
—	NEC Information Systems	71
—	NeXT	16-17
152	PC Designs	93
231	Priority One Electronics	C5
207	Swan Technology/TCP	125
264	Tandy/Radio Shack	223
178	Telemart	302
285	Toshiba	114-115
	Connectivity	
325	Western Telematic, Inc.	37
	Desktop Publishing	
319	Pacific Data Products	158
	Input Devices	
96	Genius Mouse/KYE	58
108	KeyTronic	28
—	Microsoft	215
	LAN	
77	Applied Creative Technology	85
	Monitors/Displays	
29	Amdek	143
80	Elite Microsystems	20-21
312	NEC Home Electronics	80-81
221	Princeton Graphics Systems	12
255	Sampo	171
	Network	
77	Applied Creative Technology	85
	Other Peripherals	
39	Computer Accessories	38-39
96	Genius Mouse/KYE	58
325	Western Telematic, Inc.	37
	Printers/Plotters, etc.	
5	Advanced Matrix Technology	255
15	Brother International	197
55	Canon USA	102-103
87	Hewlett-Packard	30-31
149	Kansai Int'l	113
319	Pacific Data Products	158
224	Printers Plus	303
—	Power Protection	62
—	Cuesta Systems	64
	Scanners/Digitizers	
10	Barcode Industries	236
88	Hewlett-Packard	56-57
250	Sharp	22
283	Xerox Imaging Systems	90-91
	Storage	
148	KAO Corp.	243
—	NEC Home Electronics	65-68
—	Sony	249

Reader Service Number — Page Number

SOFTWARE

Accounting/Financial

262 Chipsoft 105
27 Chuck Atkinson Programs... 248
45 Computer Associates 33
— DAC Software 97
183 Macola..... 60
186 Meca Ventures..... 235
130 Parsons Technology..... 198-199
144 Peachtree Software..... 239

CAD/CAM

306 American Small Business Computers 126

Communications

279 Datastorm Technologies..... 258
57 DCA/Crosstalk 176
173 Microcom 166
236 SoftKlone..... 94

Database Management

38 Clarion Software..... 228
181 Concentric Data Systems.... 140
193 Nantucket..... 250

Desktop Publishing

8 Aldus..... 34-35
328 Delrina Technology, Inc. 110-111
304 Digi-Fonts 256
238 Power Up Software Corp. ... 211
274 Software Publishing 59
260 Timeworks 23

Entertainment/Games

3 Activision 245

Fontware

— Linotype..... 73

Financial Planning

— Money Magazine 207

Graphics

16 Corel Systems Corp..... 219
161 Map Info..... 52
— Micrografx 18

Integrated Software

— Ashton-Tate 95

Language

147 Matrix Software 101

LAN

— AT&T Computer Systems.. 41-48
— TOPS 9

Management

20 askSam..... 53
134 Microbiz 294

Music Software

229 Passport Designs..... 246

Other

79 Haventree Software 26
199 OCR Systems 15

Project Management

46 Computer Aided Management 189

Shareware

241 Reasonable Solutions..... 297

Spreadsheets/Templates/Forms

— Lotus 62-63
253 Xerox 165

Storage

252 SPSS Inc..... 240

Utilities

— Bloc Publishing 40
— Bloc Publishing 36
181 Concentric Data Systems.... 140
— EasySoft, Inc. 5-7
71 Fifth Generation Systems ... 131
230 Paul Mace Software..... 226-227
232 Personics 27
91 Peter Norton 221
233 Proximity Technology..... 248
226 RightSoft 145
296 White Crane 238

Windows

107 hDC..... 179
— Microsoft..... 180-181
— Quarterdeck..... 186

Word Processing/Aids

— IBM..... 129
— Microsoft 172
282 Reference Software..... 231
220 Samna..... 185
— Software Spectrum..... 237

MISCELLANEOUS

Computer Accessories

— Curtis Manufacturing Co..... C6
217 Merritt Computer Products.. 256

Mail Order

— Arlington Computer Products 300-301
24 Bulldog Computer Products.. 305
213 Computer Direct 306-307
200 Computer Discount Warehouse..... 295
50 CPU 288
240 Fast Micro..... 286-287
227 Gateway 2000 50-51
122 Great Western Electronics... 289
41 Kenosha Computer Center... 304
— L.A. Trade..... 289
163 Mighty Micro 292
— Montgomery Grant 296
218 Pacific Computer, Inc..... 285
— PC Connection 146-151
224 Printers Plus 303

Q.

"Where Do I Turn For More Information?"

A.

1. Turn to the Reader Service Card at the back of this issue of *PC World*.
2. Find the Reader Service number of the product you want in the product or advertiser indexes.
3. Circle the number, fill out the postage-paid card and send it in. It's that simple.

In return, our advertisers will send you more information on the products you want. It's just another way that *PC World* helps you make the best buying decisions for your company.

PC WORLD

Reader Service Number — Page Number

125 RP Systems 293
207 Swan Technology/TCP 125
178 Telemart 302
284 Ultra-Comp 290-291
— United Computer Express ... 289
286 USA Flex 298-299

On Line Services

40 Compuserve 205
— GE Info Systems 225

Periodicals/Subscriptions

190 NSTL 281
191 NSTL 247
196 NSTL 259

Security

31 Secure-It 246

Products Featured in Editorial

Get more information—circle the appropriate number on the reader service card.

Reader Service Number — Page Number

Accounting

687 Quicken 3, Intuit 108

Add-On Board

680 Hicard Micro Channel Memory Board, RYBS Electronics..... 96

Communications

607 MicroPhone, Software Ventures 178

Computer System

681 Amdek System/286N, Amdek 100
675 Dynabook 286, Dynabook Technologies..... 89
677 Mitac MPS2386, American Mitac..... 89

Reader Service Number — Page Number

Data Base Management

606 FoxPro 1.0, Fox Software 78
605 Superbase 2, Precision Software..... 188

Data Base Utility

642 AutoSwap, Lambda Group... 204
639 dBASE File Recovery 1.0, Tate Publishing..... 204
645 dBASE On Line, SofSolutions 204
682 dBASE STATS, Ashton-Tate..... 100
628 DBMS/Copy 2.0, Conceptual Software..... 203
646 dBoost 2.0, NewSpace 1.07, Isogon 204
636 dDupChk Duplicate Recognition 1.0, Prairie Software 203
643 Dr. Switch, Black & White Int'l..... 204
640 dSalvage, Comtech Publishing..... 204
616 dTrieve 1.2, Datamate 201
629 MacroPIK'r 1.4g, Samkhya .. 203
641 QuickFix-2 1.08, Hilco Software..... 204
617 R&R Relational Report Writer 3B, ConcentricData Systems 201
618 Snow Report Writer 3.02, Snow Software..... 201
644 Trading Places 1.0, Tate Publishing..... 204

Desktop Publishing

615 dbPublisher 2.0, Digital Composition Systems 201
610 Finesse 3.0, Logitech 153
611 PFS: First Publisher 2.1, Software Publishing 154
612 Publish-It 1.13, Timeworks .. 155
613 Springboard Publisher 1.01, Springboard Software 156

Development Tool

695 Ada ROM, C CD-ROM, Alde Int'l Publishing..... 244
602 Bridge 386 & Toolkit 1.10, Softbridge Microsystems 182
624 dQuery 3.0, Quadbase Systems 202
691 Lattice C 6.0, Lattice 112
690 Objectworks for Smalltalk-80, ParcPlace Systems 112
625 Query 2.0, YSC Technology.. 202

Reader Service Number — Page Number

626 Seekit 1.4, Integrated Data Technologies..... 202

Display

683 Cornerstone XL, Cornerstone Technology 104

Graphics

665 35mm Express 4.1, Business and Professional Software 119
689 Corel Draw 1.1, Corel Systems 112
619 dGE 3.0, Pinnacle Publishing..... 202
620 dPict 1.1, Paragon Technical Services 202
666 Draw Applause 1.1, Ashton-Tate..... 119
621 FoxGraph, Fox Software 202
667 Freelance Plus 3.01, Lotus Development 122
668 GEM Presentation Team 1.1, Digital Research 123
669 Graph Plus 1.3, Micrografx .. 124
670 Harvard Graphics 2.12, Software Publishing..... 127
622 Scanbase API 2.0, Scanbase Graphics 202
623 SilverPaint Library 1.13, SilverWare 202
671 Xerox Presents 1.0, Xerox Software Marketing Services 127

Information Management

603 DeskTop Set 2.01, Okna..... 184

Input Device

679 Kraft Trackball, Kraft Systems 92
688 Microsoft Mouse 400 Series, Microsoft 108

Integrated Software

701 Microsoft Works 2.0, Microsoft 84

LAN Application

660 LANSpace, LAN Systems 256
661 LANSpool 1.57, LAN Systems 256
622 PS-Print 2.40, Brightwork Development 256
676 Saros FileShare, Saros..... 92

LAN Package

651 10Net Plus 4.0.83, Digital Communications 160
652 Lansmart 1.14E, D-Link Systems 162

Reader Service Number — Page Number

653 Lantastic 2.53, Artisoft 163
654 Powerlan 1.2, Performance Technology 167
655 TOPS 2.1, Sun Microsystems 168

On-Disk Publication

697 Microsoft Programmer's Library 1.1, Microsoft..... 244
698 Moby Words, Illumind..... 244

Operating System/Environment

700 NewWave, Hewlett-Packard .. 61

Printer

702 HP LaserJet IIP, Hewlett-Packard 82
684 PageLaser6, Toshiba America 104
678 QMS ColorScript 100 Model 10 QMS..... 96

Scanner

656 Datacopy Model 730GS, Xerox Imaging Systems..... 135
657 Hewlett-Packard ScanJet Plus, Hewlett-Packard 137
658 IBM PageScanner Model 3119, IBM..... 138
659 Microtek MSF-300G, MSF-400G, Microtek Lab 142

Tax

601 TaxView 2.00, SoftView..... 187

Text Search Utility

635 DataFinder 4.01, TSR Systems 203
637 Friendly Finder 4.3, Proximity Technology 203
638 UltraSearch 1.1, Index Applications 204

Utility

627 Data Junction 3.0, Tools & Techniques 202
633 Newspace 1.07, Isogon 203
632 Free Space 1.1, Tate Publishing..... 203
630 PC Converter Plus 1.3, Softsync 203
634 Squish Plus 1.05, Sundog Software..... 203
631 Transformer, SourceMate Information Systems..... 203
650 Windows Manager 1.0, hDC Computer 183

Word Processor

604 Ami Professional, Samna 177

U.S. SAVINGS BONDS

THE GREAT AMERICAN INVESTMENT

FREE PRODUCT INFORMATION

PC WORLD

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP (required) _____

TITLE _____ PHONE ( ) _____

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to *PC WORLD*. You will be billed $19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For Information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

November 1989 **Expires 3/14/90** **S1**

Free Product Information

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871

Free Product Information

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871

FREE PRODUCT INFORMATION

PC WORLD

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP (required) _____

TITLE _____ PHONE ( ) _____

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐ Check this box for your subscription to *PC WORLD*. You will be billed $19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

November 1989 **Expires 3/14/90** **S2**

PC WORLD MAIL ORDER Shopping Guide

Buy with Convenience

Buy with Confidence

TELL ME MORE!

FREE information on the products featured or advertised in *PC World* can be requested using the postage-paid Reader Service Card found in this issue.

PC WORLD

SPECIAL SALE

DESK TOP PACIFIC-286-12

- 80286-12
- 1.2 MB Floppy Drive
- 640K RAM
- Serial / Parallel / Game
- 101-Key Enhanced Key Board (Click)
- 6/12 MHz Key Board Switchable
- MM2 HD & FD Controller
- 80287 SOCKET
- 200W POWER SUPPLY
- 80286-16 (option)

MONO SYSTEM
- W/Mono Monitor & Card
- 20 MB Hard Disk

$1095

VGA COLOR SYSTEM
- W/VGA Card & Monitor
- 20 MB Hard Disk

$1580

EGA COLOR SYSTEM
- W/EGA Card + Monitor
- 20 MB Hard Disk

$1400

DESK TOP PACIFIC-386-20

- 80386-20
- 1 MB RAM (Max 8 MB on board)
- Serial / Parallel / Game
- 20 MHz SI=23
- MM2 HD & FD Controller
- 80387 SOCKET
- 230W POWER SUPPLY
- 40 MB (ST-251-28 MS)
- One 1.2 MB FD
- 101 Key Board (Click Feel)
- 80386-25 (option)

MONO SYSTEM
- W/Mono Monitor
- Mono Card

$1795

EGA SYSTEM
- W/EGA Card
- EGA Monitor

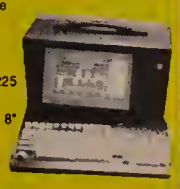
$2195

VGA SYSTEM
- W/VGA Card
- VGA Monitor

$2295

LCD-286-10 PORTABLE ____ $1349.00

- 10 MHZ 80286
- 640K RAM
- SI = 10.3
- LCD Screen
- Super Twist
- Back Lighting
- 86 Key Board
- External RGB Adapter
- 80286-12 (option)
- 80286-10 (option)
- 640 X 200 Dots (Option 640 X 400)
- Serial / Parallel / Game
- 1.2 MB Floppy drive
- 80287 Socket
- 200 W Power Supply
- 20 MB Hard Disk ST-225
- 23 lbs
- Side 15 3/4" X 9 1/2" X 8"
- EGA (option)



LCD-386-20 __ $2195.00

- 80386-20 MHZ
- One 1.2 MB Floppy Drive
- 40 MB Hard Disk) (ST-251-128 MS)
- LCD Screen (640 X 200)
- Key Board (86 Keys)
- Serial / Parallel / Game
- 80387 Socket
- 200 W Power Supply
- 1 MB RAM (Max 8 MB on board)
- Built-in Backlight
- LCD Screen 600 X 400 (Option)
- External RGB monitor
- Size 15 3/4" X 9 1/2" X 8"
- EGA (option)

GAS PLASMA 286-12 __ $1895.00

- 640 K RAM (Max 4 MB on board)
- 1.2 MB FD
- 20 MB HD ST-225
- I/O Card
- Key Board
- MM2 HD/FD Controller
- Gas Plasma 640 X 400
- Carrying Case (option)
- 200 W Power Supply
- 80287 Socket
- 20 lbs
- Serial/Parallel

GAS PLASMA 286-20 __ $1995.00

- 80286-16 CPU
- 20 MB ST-125
- 640 K RAM (Max 4 MB on board)

GAS PLASMA 386-20 __ $2695.00

- 80386-20 (80386-25 option)
- SI = 23 (80387 socket)
- 1 MB RAM
- EGA (option)
- 40 MB HD (ST-251-1 28 MS)
- I/O Card
- 86 Key Board

CRT PORTABLE

CRT-PORTABLE-286-10

- Compaq Type
- 10 MHz 80286
- One 1.2 MB Floppy Drive (2nd Drive Option)
- 200 W Power Supply
- TTL Display 9" Amber or Paper white
- AT Key Board
- Serial / Parallel / Game
- 20 MB Hard Disk ST-225
- Size 16 3/4" (D) X 7 1/2"(H) X 18 3/4" (W)
- 12 MHz (Option)
- 20 MHz (Option) (CPU 16)
- 640K RAM
- EGA (option)

$1249

CRT-PORTABLE-386-20

- 80386-20
- 1.2 MB FD (2nd Drive Option)
- 84 AT Key Board
- Serial / Parallel
- 1 MB RAM (Max 8 MB on board)
- 40 MB HD (ST-251-1 28 MS)
- SI = 23
- TTL or Composit Monitor 9"
- 200 W Power Supply
- 80387 Socket
- EGA (option)
- 80386-25 (option)

$1895

PACIFIC COMPUTER

702 S. Del Mar Avenue, #B,
San Gabriel, California 91776
(FAX) 818-286-8662

Office Hour
Mon - Sat
9:00 AM - 8:00 PM

No surcharge for Credit Card
(800) 421-1102 (IN CA)
(800) 346-7207 (OUT CA) ORDER ONLY
(818) 571-5548 (Technical Support)

Circle 218 on reader service card

MORE POWER . . . LESS DOLLARS

FASTDATA
Personal Computers

If you're concerned that our price is too little to pay for a complete new computer system, we'll give you 30 days to change your mind.

When you first get your hands on a FastData computer, you may wonder what's the catch? After all, you get a fast 286 or 386 system with a monochrome monitor and a 40mb hard disk that's ready to run right out of the box. You get guaranteed compatibility. You get top-notch components from Western Digital, Seagate, Toshiba, and other industry leaders. You get a one-year warrantee (ask about our on-site option) and free technical support. You can choose peripherals from FastMicro's large inventory. And if you are not thoroughly satisfied within 30 days of having on your desk, we'll refund the purchase price (excludes shipping).

What's the catch? We don't include MS-DOS, that's $79 extra.

FASTDATA 286[12]

$1195 Includes 640K, Monitor & 40mb Hard Drive

Check Our Standard Features

- 12mhz 80286
- 640K Memory
- 40mb Hard Disk with Controller
- High Resolution Amber Monitor
- Phoenix BIOS
- Monochrome Graphics Card
- 101 Key Enhanced Keyboard with tactile click
- Parallel & Serial Ports
- Clock Calendar
- 1.2mb Floppy Disk Drive
- 5 Drive Bays
- 8 Expansion Slots
- Security Lock
- Utility Software
- 80287 Coprocessor Option
- 200 Watt Power Supply
- Call for other Options

OPTIONS

64mb 22ms Drive	Add:$200
80mb 28ms Drive	Add:$400
CGA Color	Add:$170
EGA Color	Add:$350
16 Bit VGA Color	Add:$450

FASTDATA 286[16]

$1595 Includes 1mb Ram, Monitor & 40mb Hard Drive

Check Our Standard Features

- 16mhz 80286
- 1mb Memory
- 40mb Hard Disk with Controller
- High Resolution Amber Monitor
- Phoenix BIOS
- Monochrome Graphics Card
- 101 Key Enhanced Keyboard with tactile click
- Parallel & Serial Ports
- Clock Calendar
- 1.2mb Floppy Disk Drive
- 5 Drive Bays
- 8 Expansion Slots
- Security Lock
- 80287 Coprocessor Option
- 200 Watt Power Supply
- Call for other Options

OPTIONS

64mb 22ms Drive	Add:$200
80mb 28ms Drive	Add:$400
CGA Color	Add:$170
EGA Color	Add:$350
16 Bit VGA Color	Add:$450

FASTDATA 386[20D]

$1995 Includes 1mb Ram, Monitor & 40mb Hard Drive.

Check Our Standard Features

- 20mhz 80386
- 1mb Memory
- 40mb Hard Disk with Controller
- High Resolution Amber Monitor
- Phoenix BIOS
- 101 Key Enhanced Keyboard with tactile click
- Parallel & Serial Ports
- Clock Calendar
- 1.2mb Floppy Disk Drive
- 5 Drive Bays
- 8 Expansion Slots
- Security Lock
- 80387 Coprocessor Option
- 200 Watt Power Supply
- Tower & 25mhz Options

OPTIONS

64mb 22ms Drive	Add:$200
80mb 28ms Drive	Add:$400
CGA Color	Add:$170
EGA Color	Add:$350
16 Bit VGA Color	Add:$450

About Options: At FastMicro, we know that a low price on a computer means nothing if it costs a small fortune to outfit it the way you want. That's why we offer hundreds of products to enhance your new system. Take a look at our listing of products on the next page to really appreciate how much you can save when you purchase a FastData computer system. We will be glad to integrate any of these fine products into your new system for you. At FastData, our commitment is to quality.

FASTMICRO

1-800-441-FAST

FAST MICRO HAS IT ALL!

CALL OUR TOLL-FREE ORDER LINE: 1-800-441-FAST

HARDWARE

PRINTERS

ALPS	
Allegro 24	309
Citizen	Call
Diconix	
150 Plus	319
Epson	Call
Fujitsu	
DL3400	519
NEC	
P2200	309
P5200	495
P5300	659
LC890	Call
Okidata	
182 Turbo	225
320 (IBM)	335
390 (IBM)	469
393 (IBM)	999
Panasonic	
KXP1180	175
KXP1191	225
KXP1124	319
KXP1595	425
KXP1524	525
KXP4450	1299
Star	
NX1000	167
NX2400	289
Toshiba	
P321SL	439
P341SL	599
P351SX	929

LAPTOPS

Megahertz Modems	
2400B Most Toshiba	149
2400B NEC, Epson Mitsubishi or Zenith	189
Mitsubishi	Call
NEC MultiSpeed's	Call
Toshiba	
T1000	639
T1000 768k Card	259
T1200F	1349
T1200FB Backlit	1449
T1200HB Backlit	1949
T1600	Call
T5200/100mb	5495

BOARDS

ATI	
2400 ETC Int.	149
VGA Wonder 256	265
VGA Wonder 512	319
Everex	
1200B Int Modem	59
2400B Int Modem	119
VGA 16 bit 256K	249
Genoa	
Super EGA Hi-Res	165
Super VGA #5300	249
Super VGA #5400	319
FastData *(satisfaction gauranteed)*	
2400B Int. Modem	85
CGA or MGP Card	39
Super EGA Card	109
Parallel/Serial/Game Card	39
XT 1.44 Floppy Controller	33
Hercules Graphic Card +	169
Intel	
8087-2	119
80287-10	219
80387-20	379
Orchid	
ProDesigner	269
ProDesigner Plus	369
Tiny Turbo 286	205
Paradise	
Autoswitch 480	159
VGA Plus	219
VGA Plus 16	239
VGA Professional	359
Practical Peripherals	
1200B Int Modem	59
2400B Int Modem	129
Prometheus	
Promodem 1200B Int.	49
Promodem 2400B Int.	99
Promodem 2400G Ext.	88
The Complete PC	
Answering Machine	209
Hand Scanner 400	139
USRobotics	
1200 Baud Internal	69
2400 Baud Internal	119
2400 Baud External	149
Video 7	
Fast Write VGA	237
Vega Deluxe	189
Vega VGA	219
V-RAM VGA	369

MONITORS

Magnavox	
7BM749 VGA White	129
9CM082 VGA	419
Mitsubishi	
1410 EGA	325
Diamond Scan 1381	479
NEC	
Multisync 2a	489
Multisync 3d	645
Princeton	
Max15	237
Ultrasync 12"	479
Ultrasync 14"	519
Ultra 16	835
Seiko CM1430	549
Sony	
1302 Multiscan	659
1304 Multiscan	Call
Zenith 1490	595

DISK DRIVES

Colorado	
Jumbo 40-120mb Int. Tape	269
Miniscribe	
40MB XT Kit #8450	299
40MB AT #3650	259
71MB AT #3085	549
Mitsubishi	
60MB AT MR535	379
Seagate	
20MB XT Kit #225	239
30MB XT Kit #238	249
40MB AT #251-1	319
65MB AT #277R-1	365
80MB AT #296N w/ SCSI Adapt.	499
80MB AT #4096	559
Toshiba	
360K Floppy	69
720K 3.5" Floppy	69
1.2MB 5.25" Floppy	79
1.44MB 3.5" Floppy	79

Call On Non-Listed Items

SOFTWARE

Database

Clipper	399
DataEase	449
dBase IV	439
dBXL Diamond	129
foxbase Plus	185
Paradox 3.0	419
R & A	197
Rapid File	179
Rbase for DOS	439
Reflex	159

Desktop Publishing

Byline	175
GEM Desktop Pub.	159
Pagemaker	479
PFS:First Publisher	69
Publisher's Paintbrush	149
Ventura	Call

Financial

Bedford Integr. Acct.	133
Computer Assoc. BPI	Call
DAC 3.0	53
DAC Payroll 3.0	53
Dollars & Sense	Call
Managing Your Money	113
Peachtree Complete II	139

Graphics

Corel Draw	Call
Deluxe Paint II	67
First Graphics	Call
Freelance Plus	329
GEM Artline	269
Generic Cadd Level 3	149
Harvard Graphics	255
Perspective Jr.	69

Integrated

First Choice	Call
Works	89
Windows 286	59
Windows 386	117

Mice

Keytronics Professional	75
Logitech C7 Serial	59
Logitech HiRes C9 Bus	69
Logitech HiRes C9 Serial	75
Microsoft Serial or Bus	94
Microsoft W/ Windows 286	129
OmniMouse Serial	39
PC Mouse II Serial or Bus	79

Power Protection

Curtis Ruby Plus	59
Datasheild 100	57

Programming

Macro Assembler	89
Norton Guides (Specify)	58
Turbo Assembler/Debugger	87
Turbo Basic	60
Turbo C 2.0	90
Turbo Pascal 5.0	90
Quick Basic	60
Quick C	60
Quick Pascal	60

Spreadsheets

Allways	79
Excel	Call
Lotus	Call
Lucid 3-D	53
Quattro	145

Utilities

CoreFast	60
Carbon Copy Plus	104
Desklink	95
Desqview	68
Desqview386	99
Direct Access	46
Fastback Plus	97
Formtool	54
Formfiller	85
Laplink Plus	59
Laplink III	75
MS-Dos 4.01	79
Mace Utilities	53
Norton Advanced	79
PC Tools Deluxe	Call
ProComm Plus	42
SideKick Plus	119
Sideways	37
Super PC Kwik	43
XTree Pro	67

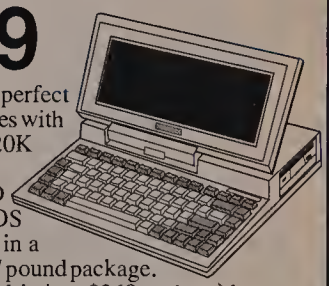
Word Processors

Ami	Call
GEM First Word Plus	57
Grammatik III	49
Manuscript	Call
Multimate Adv. II	267
Professional Write	125
Rightwriter	45
Sprint	117
Q & A Write	109
Word 5.0	Call
Word Perfect	215
Word Perfect Library	59
WordStar Prof. 5.5	189

SPECIALS

Toshiba T1000

$639



The T1000 is the perfect second PC! It comes with 512K of Ram, a 720K floppy drive, a supertwist LCD screen and MS-DOS in ROM! All this in a battery-powered 7 pound package. A 768K Ram card is just $269 and can be set as base, expanded, or a non-volitile Ram disk.

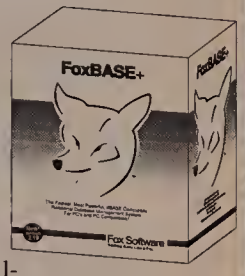
WordPerfect 5.0

$215

The most popular word processor is now even better than ever! Version 5.0 adds multiple font support, graphics integration, page preview and much more. WordPerfect 5.0 still retains its feel and ease of use that made it #1. Combine this with the best support in the industry and you can't lose.

FoxBASE+

$185



FoxBase+ 2.10 is simply the fastest dBASE compatible database software available. FoxBase+ also adds many enhancements to the dBASE language. And it's user-friendly too, its FoxCentral uses pull-down and pop-up menus and you can perform every important database operation without programming! There are even LAN, runtime, and 386 versions available.

FastWrite VGA

by Video Seven

$237

The FastWrite is the fast solution for today's high resolution monitors. Its proprietary technology incorporates high speed data paths to reduce access to memory and sixteen bit connector enhances performance even further. It does a maximum of 800x600 resolution on your multisync-type monitor and is gauranteed VGA hardware AND software compatible.

TERMS: No Charge for Visa or MasterCard. Shipping & handling charge: 3% (Min. $4). Product warranties, offers & claims are handled by the manufacturer. DOA's repaired or replaced at our option. Unopened returns get full refund. All opened returns are subject to 15% restocking fee. FastData products have a 30-day satisfaction gaurantee. Call for return authorization (RA) number first. No returns on used items. Shipping is not refundable. Sorry, no COD's. Personal/company checks delay shipping. Compatibility is not guaranteed. APO's add $15 per box. Prices/availablity subject to change. AZ orders add 6.7% tax. For your protection, we check for stolen credit cards.

New Mailing Address:
3655 E. LaSalle St., Phoenix, AZ 85040
To place orders call: 800-441-3278
For customer service call: 602-437-8975

Circle 240 on reader service card

EXPERIENCE THE POWER OF CENTRAL PROCESSING AT ITS MAX!

At CPU Inc, we are dedicated to providing you with the true power of central processing so nothing is pushed, pulled, tweaked or shoved! What you get is an honest to goodness solution to your power needs.

SUPER 386 33/33

Attention hardware buffs, here's a true engineering marvel

- ☐ **Norton (4.0) SI:40.1**
- ☐ Landmark (0.99):587
- ☐ **Power meter 1.33mips:7.779**
- ☐ Genuine INTEL microprocessor operating at 33Mhz
- ☐ **WEITEK 1167/3167 INTEL 80387 coprocessor sockets**
- ☐ 1MB RAM 70ns
- ☐ 0 wait state
- ☐ Up to 16MB of 32 bit RAM
- ☐ **32KB double bit mapping cache memory**
- ☐ Super CPUtower case
- ☐ 250 watt power supply
- ☐ 1.2MB or 1.44MB floppy drive
- ☐ 1:1 interleave HD & FD ESDI controller
- ☐ **330MB 16.5MS hard disk**
- ☐ Multi I/O:2 serial, 1 parallel, 1 game
- ☐ Enhanced MAXISWITCH 101 keyboard
- ☐ Monochrome monitor & graphics card
- ☐ **MS DOS OS/2, Unix, Xenix, Novell compatible**
- ☐ User & Technical reference manual
- ☐ Complete 72 hour burn in & installation
- ☐ Full 1 year warranty all parts and labor

$5999

SUPER 386 25/25

The original powerhouse

Ideal for users trying to strike an intricate balance of performance vs. affordability. Witness the blazing speed.

- ☐ **Super 386 25/25Mhz**
- ☐ **Norton SI 4.0 30.6**
- ☐ Landmark 0.99:43.5
- ☐ **Power meter 1.3mips:6.08**
- Genuine 25Mhz board made in the USA
- ☐ True INTEL 80386 - 25Mhz processor
- ☐ Socket for WEITEK 3167 & INTEL 80387
- ☐ 1MB RAM, 0 wait, expandable to 16MB
- ☐ **32KB 2 way associative cache memory**
- ☐ High performance 1.2 or 1.44MB floppy drive
- ☐ 1:1 interleave HD & FD ESDI controller
- ☐ **150MB 16.5MS hard disk**
- ☐ Multi I/O:2 serial, 1 parallel, 1 game
- ☐ CPU fully enhanced 101 keyboard
- ☐ CPUtower case, 250 watt power supply
- ☐ Hires monochrome monitor w/graphics card
- ☐ **MS DOS OS/2, UNIX, XENIX, NOVELL, 100% IBM AT compatible**
- ☐ Complete systems manual & set up software

$4099

FREE
EMS SOFTWARE
DOS 4.01 & GW Basic
$199 VALUE
WITH PURCHASE OF ANY SUPER 386 SYSTEM

SUPER 386 20/20

26.7Mhz Landmark Benchmark

Highest performance: faster than IBM PS/2 Model 80, Compaq 386/20. 20 Mhz and 0 wait state make it ideal for complex data base management, CAD/CAM and Desktop Publishing.

- ☐ Super 386 20/20Mhz, 0 wait state
- ☐ **INTELL ΣΣ 80386 20Mhz processor**
- ☐ Socket for 80387/ Weitek 3167 and 1167 math coprocessor
- ☐ 1MB 80ns RAM expandable to 10MB
- ☐ 110MB 28ns Hard drive
- ☐ 1.2MB or 1.44MB floppy drive
- ☐ **1:1 interleave HD/FD controller**
- ☐ **32K cache 4-way associative memory**
- ☐ 2 serial, 1 parallel, 1 game port
- ☐ Monochrome monitor w/ graphics card
- ☐ CPU fully enhanced 101 keys keyboard
- ☐ **MS DOS OS/2, UNIX, XENIX, NOVELL compatible**
- ☐ Complete systems with manual and set up software

SYSTEM	CPUTower	Desk Top
386/20Mhz w/ cache	$2799	$2699
SUPER 386/20Mhz	$2599	$2499
SUPER 386/16Mhz	$2499	$2399

UPGRADE TO 4MB RAM
$459

SUPER 286/20

26.0Mhz Landmark Benchmark

At this price this is the best value in the 80286 marketplace. Outperforms any other computer in AT class. An ideal machine for general business applications as well as software development. Offers high speed drive option to Network. BIOS compatibility makes it run all the popular software at any desirable speed.

- ☐ SUPER 286 20Mhz
- ☐ **2MB RAM expandable to 8MB on the motherboard**
- ☐ 0 wait state
- ☐ Socket for 80287 math coprocessor
- ☐ **65MB 22ms hard disk drive**
- ☐ 1.2MB floppy drive
- ☐ **1:1 interleave HD/FD controller supports 720K, 1.44MB, 360K drives**
- ☐ 2 serial, 2 parallel, 1 game port
- ☐ Enhanced 101 key keyboard
- ☐ 3 programmable timers and 7 channel DMA
- ☐ **24 bit addressing, 16 bit data path, 16 level interrupt**
- ☐ Monochrome monitor with mono graphics card
- ☐ **OS/2, UNIX, XENIX, NOVELL compatible**

SYSTEM	CPUTower	Desk Top
SUPER 286/20Mhz	$1999	$1880
SUPER 286/12Mhz	$1859	$1769

SUPER CPU 286 GAS PLASMA PORTABLE

The cute little thing on the right has no problem driving the big beautiful thing on the left at optimum output –our best selling luggable, lovable computer can now handle external EGA, VGA, Super VGA monitors, just plug in a card. With 5 expansion slots, this is the most versatile computer ever!

- ☐ 12Mhz, 0 wait state
- ☐ 1MB RAM expendable to 4MB
- ☐ 1.44KB floppy drive
- ☐ 40 MB Hard disk drive. Shock mounted; auto park
- ☐ 1:1 interleave HD/FD controller
- ☐ 1 serial & 1 parallel port
- ☐ **Non-glare, SUPER TWIST, gas plasma**
- ☐ **screen 640x400 resolution**
- ☐ **MS DOS OS/2, UNIX, XENIX compatible**
- ☐ Padded soft carrying bag
- ☐ Dimensions: 16"x8"x9"
- ☐ Weight: 22lbs.
- ☐ **External 1.2MB floppy drive included**

$2399

Same configuration:
Super 286/20Mhz portable
$2699

Super 386/16Mhz portable
with 1MB RAM expandable to 10MB
$3099

Super 386/20Mhz portable
with 1MB RAM expandable to 10MB
$3299

VISA

AMERICAN EXPRESS

SALES *HOT* LINE
800-999-9033
714-939-9133

CPU INC
385 North Anaheim Blvd.
Orange, CA 92668

TECHNICAL SUPPORT
714-939-9143
SHIPPING INFORMATION
714-939-9142
FAX: 714-939-9144

Prices are subject to change without prior notice. All items reflect a 3% cash discount. Add 3% on MasterCard, VISA, & 5% on American Express. 15% restocking fee on all returned items. CPU Inc. backs all computer systems with a full one year parts and labor warranty. All problems are solved right over the phone efficiently or via UPS and we pick up the tab!

Circle 50 on reader service card

MEMORY FOR IBM & APPLE

Individual D-RAM Chips

	60,70NS	80NS	100NS	120NS	150NS
1Meg x 1	16.00	12.00	11.00	10.75	—
256 x 4	17.00	16.00	14.00	13.00	—
256 x 1	—	5.00	4.00	3.75	3.50
64 x 4	—	9.00	6.00	5.50	5.00
64 x 1	—	—	2.00	1.75	1.50

SIMM MODULES (Add $15.00 for SIPPS)

	60,70NS	80NS	100NS	120NS	150NS
1Meg x 9 (IBM)	399, 169	139.00	119.00	118.00	—
1Meg x 8 (Apple)	Call	129.00	119.00	117.00	—
256 x 9 (IBM)	69.00	49.00	42.00	36.00	32.00
256 x 8 (Apple)	60.00	45.00	38.00	34.00	30.00

VIDEO RAM (ZIP PACKAGES) 64x4-12NS Video 7, ATI Boards 99.00

INTEL

8087	85.00	80287-10	219.00
8087-2	119.00	80387-16	329.00
8087-1	169.00	80387-16SX	329.00
80287-6	129.00	80387-20	369.00
80287-8	199.00	80387-25	469.00
80C287A	279.00	80387-33	599.00

★ ★ — SPECIAL — ★ ★

16 BIT MEM. BOARD FOR 286, 386 AT
0K-8Meg Board • 4.0 LIM Compatible
Conventional, Exp. & Ext. Memory
Supports DOS, OS/2, LIM/EMS & EEMS
Split Mem. Addrng • CPU speeds to 33MHz
0K - $152 2Meg - $359
4Meg - $579 8Meg - $1009

IBM PS / 2 SIMM MODULES

IBM PART NO.	Works With MODEL NO.	Compat. Upgrade MB OR EXP BD.
30F5364 (512K)	30-286	89.00
30F5360 (2Meg)	30-286, 50, 60	449.00
6450603 (1Meg)	70-E61, 70-121	299.00
6450604 (2Meg)	50Z, 70-E61, 70-121	499.00

All other IBM PS/2 Memory Modules Call

Please call for speeds you don't see. PLCC. SOJ, Zip, Flat Packages also available. Price and availability are subject to change. California Orders, please add 6.5% sales tax. Returned orders are subject to a 20% re-stocking fee. **No surcharge for MasterCard or Visa,** add 6% surcharge for American Express. Prepaid orders, MC, Visa, Fortune 500, Government, Institutional P.O.'s only.

Prices Subject to Change

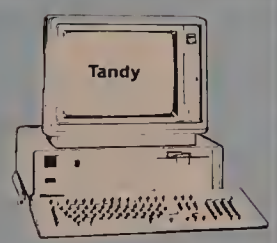
L.A. Trade

15342 Hawthorne Blvd., #209
Lawndale, CA 90260
213-970-1934
FAX: 213-973-1075

1-800-433-3726

SAVE 20-40%
ON TANDY® COMPUTERS!
America's #1 Compatibles

CALL For Info & Pricing On Tandy's New Releases!



* Exciting New Laptops Available. Save Hundreds!
* Save Hundreds of Dollars on Tandy's Complete Line!

- ✓ Complete Line of Tandy Equipment in Stock.
- ✓ Courteous, Efficient Service & Customer Support.
- ✓ We are Experts with NON-Tandy Peripherals...SAVE!
- ✓ This is our Seventh Year of Discount Operation.
- ✓ SALE! 32 Meg. Hardcards, list $649, OUR PRICE $399!
- ✓ Major Savings on Citizen & Star Printers.
- ✓ Call for Monthly System Specials.

CALL OR WRITE TODAY...
SEE HOW MUCH YOU CAN SAVE!

1-800-447-4225

Colo. residents, shipping and customer service, call: (303)249-9125

GREAT WESTERN ELECTRONICS 232 MAIN ST • MONTROSE, CO 81401

• HOURS: 9-5 MST, M-F

Circle 122 on reader service card

UNITED COMPUTER EXPRESS

724 7 AVE, NEW YORK CITY, NEW YORK 10019
800-448-3738 212-397-1081
ALL UNITS ARE TESTED AND FORMATED BEFORE SHIPPING

VENDEX VENDEX VENDEX

Original IBM At
26 pc. Pro Package ORIGINAL

- 80286 Processor
- 640K Memory
- 5¼ 1.2 meg Floppy Drive
- 3½ 1.4 meg Floppy Drive
- Seagate 40 meg Hard Drive
- 8 Expansion Slots
- VGA Hi Res. Video Card
- VGA Hi Res. Color Monitor
- 3 Button Mouse
- Panasonic KXP-1124 *Printer*
- Cable
- Desk Top-Outliner-Word Processor
- Spread Sheet, Graphics Data Base, Communicator
- 10 Diskettes/Cleaner
- Disc Holder/70 Disc Storage

$2948

VENDEX HEADSTART III NEW

- 12 MHZ
- 1 mg RAM
- 5¼ 1.2 mg Floppy Drive
- 3½ 1.44 mg Floppy Drive
- 32. mg Hard Drive
- 3 Expansion Slots
- VGA System
- Mouse/Software Bundle

$2288

EPSON EPSON EPSON

EQUITY 1+ IBM XT COMPATIBLE 26 PC. PACKAGE $698
Equity 1 + CPU + Keyboard -360K Floppy Drive-12" Computer Monitor
Available w/20, 30, 40 mg Hard Drive Systems

IBM XT 26 PC. PACKAGE $798
IBM AT CPU + Keyboard 477 MHz • 360K Floppy Drive • Expandable to 540K • 12" Computer Monitor
Available w/20, 30, 40 mg Hard Drive Systems

EQUITY II+ IBM AT COMPATIBLE 26 PC. PACKAGE $1098
Equally 11 + CPU + Keyboard 640K Floppy Drive • 12" Computer Monitor
Available w/20, 30, 40 mg Hard Drive Systems

ORIGINAL IBM AT 26 PC. PACKAGE $1398
IBM AT CPU + Keyboard 1.2 mg Floppy Drive 12" Computer Monitor
Available w/20, 30, 40 mg Hard Drive Systems

EPSON NEC LEADING EDGE COMMODORE

EPSON 386-20
IBM AT Compatible 26 pc. Package $2968
CPU & Keyboard • 20 MHZ • 1 meg Ram • 1.2 Floppy Drive 40 meg Hard Drive • 12" Computer Monitor

NEC POWER MATE

Powermate I	640K-10MHZ	$988
Powermate 1+	640K-12MHz	$1238
Powermate II	640K-10MHz	$1188
Powermate II 3865X	2MB Ram-16MHz 42mg H.D.	$2268
Powermate II 386-202MB	Ram-20MHz	$3588

Leading Edge Model D
IBM XT Compatible 26 pc. Package $588
CPU & Keyboard • 360K Floppy Drive • 12" Computer Monitor with 20 Megabyte Hard Drive $968

Leading Edge Model D2
IBM AT Compatible 26 pc. Package $898
CPU & Keyboard • 1 2 mg Floppy Drive • 12" Computer Monitor
20 Megabyte Hard Drive $1368
40 Megabyte Hard Drive $1468

Commodore PC 10-1
IBM XT Compatible 26 pc. Package $478
CPU & Keyboard • 512K • 360K Floppy Drive • 12" Computer Monitor
Also available with 20/30/40 Meg System.

Panasonic FX-1650 IBM XT, PC, PS-2 Compatible 26 pc. Package $748
Panasonic CPU + Key Board • 640K RAM • 3.5" 720K Floppy Drive • 12" Computer Monitor • Software Bundle • 10 Diskettes • Disc Drive Head Cleaner

P R I N T E R S

EPSON	
LX-810	$175
LQ-510	$325
LQ-500	$299
FX-850	$335
FX-1050	$425
LQ-850	$515
LQ-950	$565
LQ-1050	$725
LQ-2550	$899
HEWLETT PACKARD	
HP Desk Set Printer	$595
HP Desk Set Plus	$685
HP Paint Set Printer	$1075
HP Lazer Set II D	$2819
PANASONIC	
1092i	$285
KXP-1524	$499
KXP-1595	$405
KXP-1124	$319
KXP-1180	$175
KXP-1191	$225
KXP-3131	$315
KXP-4450	$1399
NEC	
P-2200	$335
P-2500	$485
P-5300	$645
STAR	
NX-1000	$179
NX-1000 Rainbow	$219
NX-2400	$319
Laser printers	Call

LASERJET SERIES II $1599

1MG RAM EXPANDER	$295
2MG RAM EXPANDER	CALL

OPEN 7 DAYS A WEEK FROM 9-8
CALL TOLL FREE 1-800-448-3738 NY RESIDENTS/INFO CALL (212)397-1081
[illegible]
FAX NUMBER (212) 397-3056

ALL IBM COMPATIBLE COMPUTERS AVAILABLE WITH 20/30/40/60/80 HARD DRIVES
ALL SYSTEMS SUPPORT MGA/CGA/VGA/MULTISCAN
PACKAGE DEALS AVAILABLE ON ALL SYSTEMS!!

Please Call 1-800-435-2266

the ULTRA ADVANTAGE™

Compare our prices and features to other package offers. We know you'll agree the Ultra Advantage is the most complete package available–at the most competitive price. Don't settle for less!

The ULTRA Advantage Complete XT System $1,095

Ultra Turbo 10 640 PSC
Featuring
- 4.77/10MHz
- 8088-1 CPU
- 8087-1 Socket
- 640K RAM
- Two 360K Floppy
- Dual Floppy Controller
- Mono Graphics Card
- 720x348 Amber Monitor
- AT Style Keyboard
- 150 Watt Power Supply
- 0 Wait State
- Serial Port
- Parallel Port
- Game Port
- Real Time Clock
- Power LED Turbo
- 8 Expansion Slots
- **PLUS** all the features described at right under photo

OPTIONS:

	Mono	EGA	VGA
2 Floppy Drives	$1,095	$1,495	$1,575
20MB 65MLS	1,285	1,685	1,765
30MB 65MLS	1,315	1,715	1,795
60MB 40MLS	1,495	1,895	1,975

All **ULTRA ADVANTAGE** packages are IBM compatible and include these features:
- **Seikosha SP1600 Dot Matrix Printer** Featuring 160 cps draft/40 cps NLQ, parallel interface, auto sheet load, advanced front panel controls and 2.3 K standard memory
- PFS:First Choice Integrated Software with Word Processing, Spreadsheet, Database and Graphics Programs
- **Genius Mouse with Dr. Halo III Software**
- **MS-DOS 4.01 with GW Basic**
- 1,000 Sheets Micro Perf 20 lb. Continuous Feed Paper
- 10 DS/DD Sony Diskettes
- 6 Foot Printer Cable
- UL Listed Surge Protector

The ULTRA Professional Advantage 286 Complete 286 System w/20 MEG $1,595

Ultra 286-10
Featuring
- 6/10MHz Processor
- 80286 CPU
- 512K RAM
- Expandable to 1MB
- 11.7 Norton SI
- Teac 1.2MB Floppy
- ST225 20MB 65MLS Hard Drive
- HDD/FDD Controller
- Enhanced Keyboard 101
- 200 Watt Power Supply
- 0 Wait State
- Serial Port
- Parallel Port
- Game Port
- Real Time Clock
- Power LED Turbo
- 8 Expansion Slots
- **PLUS** all the features described at left under photo

OPTIONS:

	Mono	EGA	VGA
20MB 65MLS	$1,595	$1,995	$2,075
30MB 65MLS	1,635	2,035	2,115
40MB 28MLS	1,795	2,195	2,275
60MB 40MLS	1,815	2,215	2,295
80MB 28MLS	2,005	2,405	2,485
120MB 28MLS	2,136	2,536	2,616
12MHz Version	99		

ULTRA ENHANCEMENTS

Monitor Combos
Sanyo Green 12" and Monographics Card with Printer Port 99.00
Samsung 2565 Amber T/S 12" and Monographics Card with Printer Port 129.00
Samsung 125F Amber Flat Screen T/S 12" and Monographics Card with Printer Port 139.00
Samsung 2571 Paper White T/S 12" and Monographics Card with Printer Port 159.00
Magnavox CM8762 RGB 13" 640x240 and Colorgraphics Card 289.00
Magnavox 9CM053 EGA 14" 640x350 and EGA Card 529.00
Magnavox 7490741 VGA Mono 14"x480 and with Renaissance VGA Card 299.00
Magnavox 9CM062 VGA 14" 640x480 with Renaissance VGA Card . . . 589.00
Magnavox 9CM082 VGA T/S 14" 640x480 and with Renaissance 8 Bit VGA Card 649.00
Sony 1320 VGA T/S 14" 800x600 .25 DP and with Renaissance 16 Bit VGA Card (640x480 only) 819.00

SONY
Sony 1302 VGA T/S 14" 900x560 .26 DP and with Renaissance 16 Bit VGA Card 959.00
Sony 1304 VGA T/S 14"1024x768 .25 DP and with Renaissance 16 Bit VGA Card 999.00

Monitors
SAMSUNG
Samsung 12" TTL HiRes Amber 720x348 . . . . . 89.00
Samsung 12" TTL HiRes Amber Flat Screen 720x348 . . . . . 99.00
Samsung 12" TTL HiRes Paper White Flat 720x348 . . . . . 109.00

MAGNAVOX
Magnavox 14" RGB 640x240 CMB762 . . . . . 249.00
Magnavox 14" EGA 640x350 9CM053 . . . . . 359.00
Magnavox 12" VGA Mono 800x600 7BM749 T/S. 159.00
Magnavox 14" VGA 640x480 9CM062 . . . . . 399.00
Magnavox 14" VGA 800x600 9CM082 T/S 499.00
AV7212 T/S for 8762-7AV218 T/S for 053 and 062 . . . . . 30.00

SONY
Sony 13" 1320 800x600 VGA only .25 Dot Pitch 579.00
Sony 13" 1302 900x560 Multiscan VGA Up .26 Dot Pitch 739.00
Sony 14" 1304 1024x768 Multiscan VGA .25 Dot Pitch 799.00

Keyboards
K-151 5150 Style/84 Keys/10 Function Keys on Left 49.00
K-156 Enhanced/101 Keys/12 Function Keys Across Top 59.00

Ultra-Click Enhanced/101 Keys Tactile 12 Function 69.00

SEIKOSHA Printers
SP-1600 AI 199.00
SK-3000 AI 399.00
SK-3005 AI 499.00
SL-80 AI 359.00
SL-130 AI 699.00
SBP-10 . . . . . 3595.00

Fax Machine
Dex Ten Fujitsu Fax Machine . . . 695.00

Plotter
Fujitsu Image Graph 6 Pin Color Plotter 899.00

Power Supply
P150-150 Watt UL Listed 49.00
B200—200 Watt UL Listed Baby AT/Fits XT&AT 69.00
P200—200 Watt UL Listed 69.00

TEAC Floppy Drives
T360 360K 5.25" 79.00
T120 1.2M 5.25" 99.00
T720 720K 3.5" 89.00
T144 1.44M 3.5" 99.00

Seagate Hard Drives
ST225 20MB, 65MS, H.H. 219.00
ST225 20MB, 65MS, H.H. with Controller 269.00
ST238 30MB, 65MS, H.H. RLL 239.00
ST238 30MB, 65MS, H.H., with RLL Controller 299.00
ST251-1 40MB, 28MS, H.H. 429.00
ST277 60MB, 40MS, H.H. RLL 419.00
ST277 60MB, 40MS, H.H., with RLL Controller 479.00
ST4096 80MB, 28MS, F.H. 629.00
ST4144 120MB, 28MS, RLL, F.H. 740.00
ST125 3.5" 21MB, 40MS 255.00
ST138 3.5" 32MB, 40MS 275.00
ST138 KIT 3.5" 32MB, 40MS with 5.25 Drive Cage 339.00
ST157 3.5" 49MB, 40MS 429.00

Seagate Hard Drive Cards
ST125 21MB 40MS 349.00
ST138 32MB 40MS 369.00
ST157 49MB 40MS 539.00

XT Compatible Cards
B105 Floppy Controller 19.00
B105-1 Floppy Controller (2 Internal, 1 External) 25.00
B132 Multi I/O (FDC/Serial/Parallel/Clock/Game) 54.00
B131 I/O Plus II (Serial/Parallel/Clock/Game) 39.00
B106 R5232 Serial Port 18.00
B106-1 R5232 Serial Port (2 Ports) 26.00
B113 640K RAM Card (IBM PC/XT only) 29.00
B109 Parallel Port 15.00
B129 Clock Card 22.00
B107 Game I/O (2 Joystick Ports) 15.00
CCARD-11 Compaticard 2 Internal FDC Primary/Secondary 89.00
CCARD-1 Compaticard 2 Internal/2 External Primary/Secondary 119.00

ULTRA-COMP®

Corporate Showroom—11988 Dorsett Road, Maryland Heights, Missouri 63043 314-991-1988
Distribution—2600 N. Broadway, St. Louis, Missouri 63102 314-621-4999
IBM, IBM PC XT are Trademarks of International Business Machines

Any of these components may be purchased separately.
FAX: 314-991-043

Rated #1 by Corporate ♦ University ♦ Government ♦ Small Business

♦ Ultra Turbo-10 640 PSC — $539

- 4.77-10MHz Motherboard
- 640K 120 NS
- 8088-1 CPU
- Math Coprocessor Socket
- 18M Compatible
- Norton SI 2.1
- 8 Expansion Slots
- AT Style Case
- AT Style Keyboard
- Keyboard Lock
- Reset Button
- LED and Power Indicators
- 150 Watt Power Supply
- 5.25 360K Floppy Disc Drive
- Parallel Port
- Serial Port
- Game Port
- Clock Calendar with Battery Backup

OPTIONS:

	MONO	EGA	VGA
One 360K	$ 668	$1068	$1148
20M8 65MS	937	1337	1417
30M8 65MS	967	1367	1447
60M8 40MS	1147	1547	1627

♦ Ultra 286-10 — $879

- 6-10MHz Motherboard
- 80286 CPU
- Math Coprocessor Socket
- 18M Compatible
- Norton SI 11.7
- 0 Wait State
- Choice of 5.25" 1.2M8 or 3.5" 1.44M8
- 512K 100N5
- Expandable to 1M8
- Hard/Floppy Controller Card
- 8 Expansion Slots
- 6-16 Bit Slots, 2-8 Bit
- 200 Watt Power Supply
- Enhanced Keyboard 101 Keys
- Reset Button
- LED Power and Turbo Indicators
- Keyboard Lock
- Serial Port
- Parallel Port
- Game Port
- Clock Calendar with Battery Backup

OPTIONS:

	MONO	EGA	VGA
One 1.2M8	$1008	$1408	$1488
20M8 65MS	1227	1627	1707
30M8 65MS	1267	1667	1747
40M8 28MS	1427	1827	1907
80M8 28MS	1607	2007	2087
120M8 28MS	1748	2148	2228

12MHz Version (80 N5 RAM) $99
16MHz Version with One M8 (60 NS RAM) $375

♦ Ultra 386-20 — $1859

- 6-16MHz Motherboard
- 80386 CPU
- Math Coprocessor Socket
- 18M Compatible
- Norton SI 18.7
- Choice of 5.25" 1.2M8 or 3.5" 1.44M8
- 1M8 RAM 80N5
- Hard/Floppy Controller 8K Buffer 1:1 Interleaving
- 8 Expansion Slots
- 2-32 Bit Slots 5-16 Bit Slots 1-8 Bit Slot
- 200 Watt Power Supply
- Enhanced Keyboard 101 Keys
- Reset Button
- LED Power and Turbo Indicators
- Keyboard Lock
- 2 Serial Port
- 1 Parallel Port
- Sixteen-Level Interrupt
- Seven Channel DMA for Disk and Special I/O

OPTIONS:

	MONO	EGA	VGA
One Floppy	$1988	$2388	$2468
20M8 65MS	2207	2607	2687
30M8 65MS	2247	2647	2727
40M8 28MS	2407	2807	2887
80M8 28M5	2587	2987	3067
120M8 28MS	2728	3128	3208

♦ Ultra-Max 386-25 — $2469

- 10-25MHz Motherboard
- 80386-25MHz Intel Double Sigma CPU
- 80387 Co-Processor Socket
- 3167 Weitek Co-Processor Socket
- 4.5 Norton S.I. 31.0
- Landmark Speed Test 43.5MHz VO.99
- MIPS SI 6.2
- Choice of 5.25" 1.2M8 opr 3.5" 1.44M8
- Enhanced Keyboard 101 Keys
- 200 Watt Power Supply
- Sixteen-Level Interrupt
- Seven Channel DMA for Disk and Special I/O
- 8 Expansion Slots (1-32 Bit 6-16 Bit 1-8 Bit)
- Hard/Floppy Controller 8K Buffer 1:1 Interleaving
- 1M8 RAM 80N5
- Up to 8M8 DRAM on Board, by either DIPP 44256, 1M8 DRAM and/or 41256, 1M8 DRAM SIMM Combination
- On Board Battery Backup
- Hardware Reset
- Write Back Cache Design Getting Higher Hit Rate, Cache Size, 64K8/256K8 Selectable

OPTIONS:

	MONO	EGA	VGA
One Floppy	$2598	$2998	$3078
40M8 28MS	3027	3427	3507
80M8 28M5	3227	3627	3707
120M8 28MS	3338	3738	3818

FREE!!! $149 Value
All systems include PFS: First Choice integrated software with word processing, spreadsheet, database and graphics programs

AT Compatible Cards

- 8215 1.44/1.2/720/360 Disk Controller 39.00
- 8208 2.5M8 RAM Card (expandable to 2.5M8) 69.00
- 8301 1M8 to 8M8 RAM Card 32 Bit Card 109.00
- 8231 AT I/O Card 1 Serial/Parallel/Game Port 39.00
- 8231A AT I/O 2-Serial/1-Parallel 39.00

Controllers

- Western Digital WX1 . . . . . 69.00
- Western Digital XT/GEN 59.00
- Western Digital 27X RLL 69.00
- ADAPTEC AC82372 HDD/FDD AT RLL Controller 1:1 . . . . . 159.00
- ADAPTEC AC82312 HDD/FDD AT MFM Controller 1:1 . . . . . 149.00

Video Cards

- 8103 Mono Graphics/Hercules Comp/Printer Port 49.00
- 804 Color Graphics/Composite B&W/Color/Light Pen 45.00
- 8135 Mono/Color Graphics with Printer Port 65.00
- 8111 RG8 Color Graphics/Printer/Light Pen 49.00
- 8209 EGA Graphics/256K Memory 159.00
- 821S Renaissance VGA RVGA-1 640x480 8 Bit 199.00
- 822S Renaissance VGA RVGA-11 800x600 16 Bit 249.00

intel Math Coprocessors

- 8087 . . . . . 95.00
- 8087-2 . . . . . 140.00
- 8087-1 . . . . . 190.00
- 80287 . . . . . 150.00
- 80287-8 . . . . . 220.00
- 80287-10 . . . . . 255.00
- 80387-16 . . . . . 405.00
- 80387-20 . . . . . 460.00
- 80387-25 . . . . . 575.00

Modems

- PP1200 Practical Peripheral 300/1200 Internal 69.00
- PP1200 Practical Peripheral 300/1200 External 99.00
- PP2400 Practical Peripheral 300/1200/2400 Internal 169.00
- PP2400 Practical Peripheral 300/1200/2400 External 195.00
- UC2400 ULTRA-MODEM 300/1200/2400 Internal 99.00

WHY BUY FROM ULTRA-COMP®?

Ultra State of The Art Technology

♦ ULTRA-COMP® keeps an innovative eye on the future to assure you of the latest technology and the finest quality products.

Ultra Systems Design

♦ ULTRA-COMP® will design any system to your exact specifications. With all the options offered, your choices are virtually unlimited.

Ultra Warranty

♦ ULTRA-COMP® provides a full one year warranty. Extended and On-Site warranties are available upon request—call for more information.

Ultra Service and Technical Assistance

♦ Our friendly and knowledgeable staff will be happy to assist you, checking delivery status, quoting prices or configuring a system.

Ultra Options

♦ ULTRA-COMP® has a complete selection of peripherals: including modems, drives, monitors, keyboards, cables, cases, I/O cards and printers. Send for FREE catalog.

Ultra Fast Delivery

♦ We keep our 82,000 sq. ft. warehouse well stocked and ship most orders within 1–2 days.

Ultra Satisfaction Guarantee

♦ If you are not 100% satisfied with your purchase, return it to us within 30 days and we will refund your money*. Our commitment is to provide you with the best value for your money. This means state of the art technology coupled with a comprehensive service and support program. The ULTRA SATISFACTION GUARANTEE—Don't settle for less.

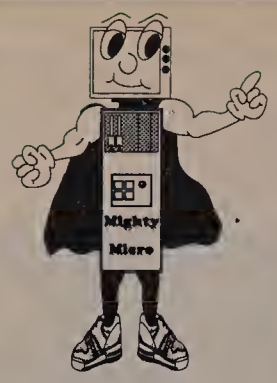
NOW AVAILABLE
The ULTRA Security Option: Extended Warranty Or On-Site Service Please call for details.

Information and Missouri orders call 314-991-1988. Personal and company checks accepted (on mail orders allow 2 weeks to clear). Customer freight and handling FOB, St. Louis, Missouri. Non Credit Card Orders shipped UPS COD.

Prices subject to change. Minimum order $25. Subject to *15% Restock Fee.

MasterCard VISA

Circle 284 on reader service card



Mighty Micro

946-D Millbrook • Aiken, South Carolina 29801

1-800-277-8585

In South Carolina Call
(803) 649-0437

For Shipping & Technical Call
(803) 649-0437

Prices Subject To Change

Mastercard, Visa, American Express and C.O.D. accepted

Policy: Add 3% shipping and handling. Personal and company checks require 2 weeks to clear. South Carolina residents add sales tax. All prices are USA prices and are subject to change and availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final. Returned shipments are subject to a restocking fee. All returns must be assigned a Return Merchandise Authorization (RMA) number. Call (803) 649-0437.

Printers

EPSON
- LX 810 200 CPS, 30 NLQ $189
- FX 850 264 CPS, 54 NLQ 339
- FX 1050 264 CPS, 54 NLQ 429
- LQ 510 225 CPS, 75 NLQ 319
- LQ 850 330 CPS, 88 NLQ 509
- LQ 950 330 CPS, 88 NLQ 519
- LQ 1050 330 CPS, 88NLQ 709
- LQ 2550 400 CPS, 108 NLQ 899

OKIDATA
- 182 Plus 180 CPS, 30 NLQ 229
- 320/321 300 CPS, 62 NLQ 329/459
- 390 270 CPS, 90 NLQ 459
- 391 270 CPS, 90 NLQ 639
- 393 450 CPS, 120 NLQ 975

TOSHIBA
- 321 SL 216 CPS, 72 NLQ 439
- 351 SX 350 CPS, 100 NLQ 922
- 341 SL 216 CPS, 72 NLQ 589
- 311 EXPRESS 379
- Page Laser 12 2595

NEC
- 2200 170 CPS, 55 NLQ 319
- 5200 265 CPS, 90 NLQ 505
- 5300 265 CPS, 90 NLQ 669
- LC890 3195

PANASONIC
- 1124 160 CPS, 53 NLQ 319
- 1180 192 CPS, 38 NLQ 185
- 1191 240 CPS, 48 NLQ 229
- 1524 240 CPS, 80 NLQ 539
- 1595 290 CPS, 51 NLQ 449
- 3131 17 CPS 315
- Laser KX4450 1359

HEWLETT-PACKARD
- Laser Series II 1689
- Laser II D 2895
- Desk Jet/Desk Jet Plus 595/725
- Pacific Data 1 mb/2 mb 285-435
- Pacific Data 25-N-1 269
- Pacific Page 439
- Intel Visual Edge 449
- Plotter in a Cartridge 229
- Headlines in a cartridge 249

CANON
- Bubble Jet 130 699
- LPB8 III 1795

Network

- Novell Advanced Netware V. 2.15 $1650
- Novell SFT Netware V. 2.15 2499
- Novell EIS Level I 4 User 419
- Novell EIS Level II 8 User 929
- NE 1000 Ethernet Workstation Bd 169
- NE 2000 199
- ARC Net PC130 119
- ARC Net PC 220 149
- ARC Net Active Hib/Passive Hub 215/69
- Western Digital Ethernet Card 235

Input Devices

- Microsoft Mouse w/windows $135
- Microsoft Mouse w/PC paint brush .. 109
- Mousesystems Mouse 89
- Logitech Series 9 Serial 69
- Logitech Series 9 Bus 79
- Logitech Scan Man 169
- Summasketch 12x12 369
- Summasketch 12x18 599
- Kurta 12x12 325

Software

- Lotus 1-2-3 ver. 2.01 ..... $299
- Lotus 1-2-3 Ver. 3.0/2.2 329
- Lotus Symphony ver. 2.0 419
- D Base IV ver. I.0 445
- Multimate Advantage II 269
- Framework III 439
- Paradox ver. 3.0 429
- Enable o/a 409
- Foxbase Plus single user ver. 2.10 ... 189
- Microsoft Work Ver. 5.0 209
- Microsoft PC Excel ver. 2.I 239
- Clipper 409
- Peachtree II 149
- Harvard Graphics ver. 2.12 265
- Professional Write ver. 2.1 129
- Professional File ver. 2.0 169
- Q & A ver. 3.0 219
- Wordperfect ver. 5.0 215
- Wordstar ver. 5.5 189
- Wordstar 2K Plus Rel. 3 269
- Clarion Pro Developer 385

Modems

- Everex 1200 int. $69
- Everex 2400 int/ext. 129/169
- Hayes 1200B/2400B Hardware Only 249/389
- Hayes 1200/2400 ext. 279/419
- Practical Peripherals half card 2400 w/Procomm 129
- US Robotics 2400/9600 ..... 139/619
- Supra Modem 2400 int/ext. 89/109

Fax

- Panasonic FXBM 89 ..... $625
- Toshiba 30/100 839
- Toshiba 3300 1025
- Toshiba 3700 EN 1189

Monitors

NEC
- Multisync II A $499
- Multisync III D 659
- Multisync XL 19" 2080
- Multisync 4D/5D 1150/2350

CTX
- CGA $239
- EGA 339
- VGA 349

PRINCETON
- MAX12 ..... $149
- Ultrasync 12" 469
- Ultra 14 529
- Ultra 16 849

MITSUBISHI
- 1410C 14" EGA $349
- Diamond Scan 499
- HL 6605 16" 1169
- HL 3905 20" 1625
- HL 6905 20" 2049

MAGNAVOX
- Amber 776 ..... $89
- RGB80 8762 249
- EGA 9CM053 349

ZENITH
- 1490 ..... $599

Compatible

10 MHZ TURBO

1 floppy, 640K, AT style keyboard, monographics card, mono monitor. $699

Color System add $150 w/20 mb add $249, w/30 mb add $269

286 12 MHZ

1 mb Ram, 1.2 floppy $895

386 20 MHZ

1 mb Ram, 1.2 floppy $1595

AST

AST Premium 286, 10 mhz, 0 wait state, 512K DOS keyboard, Controller 1.2 floppy $1269

AST Premium 386 Model 300C 20 mhz, 1.2 floppy, 1 mg, DOS keyboard . $2650

All AST computers carry a 1 year warranty

Compaq

- 386 20E 40 mb. $4595
- 110 mb 5550
- 286 Desk Pro 12 mhz 1540
- 286E Desk Pro 1850
- Compaq II Model IV 2879
- Compaq Port. 386 Model 40/100 5579/6899
- Compaq III 20 mb/40mb 3495/4069
- Compaq 386-S model 1/20/40 2350/2595/2999
- Compaq 386-25 110/300 ... 7195/9199
- Compaq SLT w/20 mb 3850
- Compaq SLT w/40 mb 4250

IBM

PERSONAL SYSTEM/2
- Model 30 286 w/20 mb $1950
- Model 50-30/60 ..... 2499/2739
- Model 55 SX 30/60 ..... 2829/3119
- Model 70 Portable 60/120 .. 5589/6029
- Model 70 - 60/120 ..... 3899/5899
- Model 80 - 40/70 ..... 4579/4875
- Model 80 - 300 8899

Laptops

- Toshiba 1000 ..... $639
- Toshiba 1200 1849
- Toshiba 1200F 1395
- Toshiba 3100E 2749
- Toshiba 1600 3250
- T3200/T5100 ..... 3395/4239
- Toshiba 5200 40/100 ..... 4999/5289
- Zenith Super Sport 20 mb 2299
- Zenith Super Sport 286 20 mb 3025
- NEC Multispeed HD 2275

Tape Drives

- Archives 40 mb int. $299
- Archives 60 int. or ext. w/card 569
- Archives 150 int. w/card 929

Graphic Cards

- ATI Wonder EGA 800 ..... $175
- ATi VGA 256k/512k 229/319
- Everex Micro Enhancer w/parallel port 125
- Genoa 4880 145
- Genoa 5100 179
- Genoa 5300 199
- Genoa 5400 259
- Hercules Graphics Card 169
- Hercules inColor 199
- Hercules VGA 169
- Orchid 800 VGA 149
- Orchid Pro Designer w/256K 229
- Orchid Pro Designer + w/512K 309
- Paradise Auto Switch 480 139
- Paradise VGA Plus 199
- Paradise VGA Professional 299
- Vega Deluxe 199
- Vega VGA 229
- Vega Fastwrite 259
- Vega V Ram 369

Math Co-Processers

- 80387-33 ..... $599
- 80387 SX 289
- 80387-25 449
- 80387-20 349
- 80387-16 319
- 80287-8 185
- 80287-10 205
- 8087-3/8087-2 ..... 89/119
- 256K Chips/64K Chips ..... Call

Drives & Controllers

- Seagate 20 mb w/contr. ST225 ..... $239
- Seagate 30 mb w/contr. ST238 259
- Seagate 40 mb for AT ST251-1 329
- Seagate 40 mb for AT ST251 309
- Seagate 80 mb ST4096 539
- Pacific Rim PS/2 360/1.2 ..... 159/189
- Pacific Rim ext 1.2 IBM 30/286 209
- Teac 5-1/4 360K 69
- Teac 5-1/4 1.2 85
- Teac 3-1/2 1.44 89
- Teac 3-1/2 7.20 69
- Bernouli Box 11 5-1/4" 20 mb. int. . 955
- 20 mb ext. w/card 1195
- dual 20 mb. ext. w/card 1769
- 44 mb int. w/card 1159
- Plus Hard Card 40 649
- Plus Hard Card 20 525

Multi Funct. Boards

- Intel Above Board + w/512K 379
- Intel Above Board I/O + w/512K 429
- Intel Inboard 386 w/adapter 950
- Intel Inboard 386 for PX w/1 mb 579
- Intel Above Board II Plus for PS/2 w/o K 279
- Intel Connection Co Processor 699
- Intel Modem for Co Processor 259
- Orchid Ramquest 16-32 w/o K 279
- Orchid Ramquest XT/AT w/o K 239
- Orchid Tiny Turbo 286 195
- Orchid Tiny Tubro Extra 249
- Orchid Tiny Turbo AT 349
- Orchid Ramquest II Z w/o K 169
- AST 6 Pack Plus w/384K 189
- AST 5251-11 + Enhanced 529
- AST Rampage 286+ 385
- AST Rampage 286-2 for Model 50/60 549
- Everex Mini Magix w/o K 59
- Irma Board III 409
- Logical Connection . 256/512K 439/519

Incorporated since 1984

Circle 163 on reader service card

HOURS:
7 AM to 7 PM Monday-Friday
8 AM to 2 PM Saturday
Call on Sunday

RP Systems™

P.O. BOX 3185 • OAK BROOK, IL 60522-3185

Visa, MasterCard, Discover and American Express Accepted.

International Orders A Specialty

COMPAQ Laptop SLT 286 20/40 Mb $3725/$4225

IBM 55 SX 30/60 Mb $2795/$3050

IBM Portable Mod 70 120 Mb Disk $5795

1% Consultant and Reseller Accrual Program
($52,485 paid in 1988)

IBM PS/2

Model 25—Color	$1250
Model 30—286 20 Mb Disk	$1795
Model 55SX—30 Mb Disk	$2795
Model 55SX—60 Mb Disk	$3050
Model 60—44 Mb Disk	$3200
Model 70—60 Mb Disk	$3550
Portable 70—60/120 Mb Disk	$5300/5795
Model 70—120 Mb Disk 20 MHz	$5150
Model 70-A21—120 Mb Disk 25 MHz	$6300
Model 75—35 MHz	$Call
Model 80—70 Mb Disk	$4800
Model 80—115 Mb Disk	$5900
Model 90—30 MHz	$Call

100% IBM Internals

COMPAQ

286 Mod 1/640 K	$1625
286e Deskpro 1/20/40	$1910/2210/2550
386 Deskpro 20E 40 Mb/110 Mb	$4475/5475
386S Deskpro 20 Mb/40 Mb	$Call/2850
386/30 84/320 Mb	$7295/10599
386/25 110 Mb/300 Mb	$6950/8900
Portable III Model 20	$3400
Portable III Model 40	$4050
Portable 386 Model 40	$5200
Portable 386 Model 110	$6800
Laptop SLT 286 20/40	$3725/4225

100% COMPAQ Internals

TOSHIBA LAPTOPS

T1000	$665
T1200FB/HB	$1485/1999
T1600 20/40 Mb Disk	$3250/3650
T3100/20e	$2800
T3200 40 Mb Disk	$3400
T5100 40/100 Mb Disk	$4125/4700
T5200 40 Mb/100 Mb	$4900/5350

ZENITH LAPTOPS*

Minisport	$1379
Supersport Mod 2	$1525
Supersport Mod 20	$2265
Supersport 286 Mod 20/40	$2975/3425
Turbosport 386 Mod 40 w/o Modem	$5050

**Up to $500 Rebate*

DISK DRIVES

SEAGATE 20 Mb Kit	$259
SEAGATE 30 Mb Kit	$295
SEAGATE 40 Mb Kit XT	$366
SEAGATE 40 Mb ST 251-1	$399
SEAGATE 80 Mb	$599
TOSHIBA 1.44 Mb Floppy	$110
PROCOM Ext 5.25" for PS/2	$290
COMPAO 1.44 1/3 HT	$195
Card Drives	
PLUS 20 Mb/40 Mb Hard Card	$535/647
PROCOM 20 Mb	$379
PROCOM 30 Mb/40 Mb	$429/519
PROCOM 45 Mb for PS/2	$795
MAYNARD 20 Mb	$Call

FAX

MURATA M1200	$Call
MURATA M1600	$899
SHARP FO220/FO330	$950/1159
SHARP FO500	$1400
TOSHIBA 3010	$1275
TOSHIBA T30100	$1049
TOSHIBA T3300	$1199
TOSHIBA T3700	$1500

COPIERS

CANON PC3-2	$539
CANON PC6RE	$1000
CANON PC7	$1210
Toners	$70–120

TAPE

IBM 6157 for PS/2	$1350
IRWIN 40 Mb Int/Ext	$465
MAYNARD 60 Mb XT/AT Int/Ext	$675/881
MAYNARD 60 Mb for PS/2	$899
MOUNTAIN 60 Mb	$1199

MONOCHROME MONITORS

AMDEK 410A	$145
COMPAQ Mono Amber/Green	$210
COMPAQ VGA Mono	$210
IBM PS/2 8503	$200
MULTISYNC GS	$249
PACKARD BELL Amber/Green	$85

COLOR/EGA MONITORS

IBM PS/2 8512	$435
PGS UltraSync	$500
SAMSUNG RGB	$245
Smartscan 735	$520
ZENITH 1390	$405

VGA/CAD MONITORS

COMPAO AGCM Monitor	$1399
COMPAQ VGA Color	$520
Hitachi HM4119	$2250
IBM PS/2 8513	$515
IBM PS/2 8514	$1150
MITSUBISHI 6905	$2310
NEC MultiSync XL	$2050
NEC MultiSync 4D/5D	$1130/2400
NEC MultiSync 2A/3D	$519/679
PACKARD BELL	$349
ZENITH 1490	$619

NOVELL NETWORK

HYUNDAI Diskless Workstation	$631
WESTERN DIGITAL 3 Node LAN kit w/WD Novell Driver	$850
Entry-level 286 Starter Kit, 4 Users	$575
NOVELL ELS II	$1075
NOVELL 286 Software V.2.15	$2100
NOVELL SFT Level II V.2.15	$3200
ARCNET PS110	$495
ARCNET PC120	$165
ARCNET PC260	$235
NE 1000 Ethernet Card	$325
NE 2000 Ethernet Card	$395
ARCNET Passive Hub	$90
ARCNET Active Hub	$469
Ethernet Terminators	$38

Novell trained & authorized sales & support.
Network support $85/hour

TERMINALS

IBM 3196	$1050
IBM 3197 Mono/Color	$1650/1750
WYSE 50 Amber or Green	$370
WYSE 60 Amber or Green	$295
WYSE 85	$394

SOFTWARE

Aldus Pagemaker	$459
COMPAQ DOS 3.31/4.0	$89/110
dBase IV	$455
DisplayWrite IV/2	$299
IBM DOS 3.3/4.01	$90/110
IBM OS/2 Standard 1.1	$255
IBM OS/2 Extended 1.1	$595
Lotus 1-2-3 V 2.01/3.0	$310/330
Lotus Symphony	$420
MicroSoft Windows 286/386	$73/135
MicroSoft Excell	$290
MicroSoft Word/Work	$220/110
Multimate Advantage 2	$259
Norton Advanced Utilities 4.5	$85
Paradox 3.0	$418
PFS First Pub	$75
Quicken	$34
Smartcom II/III	$90/150
Ventura Publishing	$490
Word Perfect 5.0	$225

LASER PRINTERS

25-in-1 Font	$295
HP DeskJet Plus	$675
HP LaserJet II/IID with toner	$1675/2725
HP ScanJet Plus with/IF	$1529
NEC LC890	$3150
PANASONIC KX4450	$1375
TOSHIBA PageLaser 12-B	$2499

PLOTTERS/SCANNERS, ETC.

CalComp	$All
HP Plotter 7440A/7475A	$965/1399
HP Plotter 7550	$2920
Sumasketch 12×12/12×18	$375/630

PRINTERS

Diconix	
150P/150 Plus	$301/333
Epson	
FX 850 260/84 cps	$345
FX 1050 260/84 cps	$510
LQ 500 60/180 cps	$399
LQ 850 264/88 cps	$510
LQ 1050 264/88 cps	$730
LQ2550 400/133 cps	$929
LX 810 30/180 cps	$195
DFX 5000 533/80 cps	$1399
IBM	
Quickwriter	$1079
Quietwriter III	$1125
Proprinter X24e	$615
Proprinter XL 24e	$810
Proprinter III XL	$645
NEC	
P2200 170/55 24 Wire	$339
P5200	$507
P5300	$705
P9XL 400/140 cps	$1025
Okidata	
ML 172P	$210
ML182 Turbo	$230
320/21	$365/477
390/91	$464/635
393/393 Color	$980/1089
Panasonic	
KX 1180 I 192/38 cps	$179
KX 1191 I 240/48 cps	$235
KX 1124 192/48 cps	$319
KX 1592 180/38 cps	$379
KX 1595 240/51 cps	$429
KX 1524 240/80 cps	$540
Toshiba	
Expresswriter 301/311	$333/410

COMM./EMULATION

IBM PS/2 50-80 5250 Emulation	$675
IBM PC XT/AT 5250 Emulation	$675
AST PC XT/AT 5250 Emulation	$575
IBM PC XT/AT 3270 Emulation	$450
IRMA Board	$Call
US ROBOTICS 1200 Int	$100
US ROBOTICS 2400 Int	$159
HAYES 1200B Int/SCII	$243/282
HAYES 1200 Ext	$277
HAYES 2400 Ext	$419
HAYES 2400B w/SCII Int	$418
EVEREX 1200 w/SW	$75
EVEREX 2400 Int/Ext	$137/195

MULTIFUNCTION CARDS

AST 6 Pack w/384K	$199
AST Advantage/2 for PS/2	$Call
COMPAQ 1Mb Memory 386/20 & 20E	$575
COMPAQ 4Mb Memory 386/20 & 20E	$2050
COMPAQ 1Mb Memory 386S/Portable	$575
COMPAQ 1 Mb SLT	$625
IBM i486 Add on	$3000

VIDEO BOARDS

ATI VGA Wonder 256K/512K	319/419
COMPAQ AG 1024 Board	$1049
COMPAQ AG Memory Board	$425
COMPAQ VDU	$145
COMPAQ VGA	$419
GENOA 5400	$409
GENOA Super Hi Res 800X600	$175
GENOA Super VGA	$310
PARADISE Auto Switch-480	$195
PARADISE VGA Plus/VGA 16	$295/301
RP MonoGraphics	$69

CHIPS

Intel	
8087-1/2/3	$220/149/109
80287-6/8/10/A	$167/220/259/355
80387-16/20/25/SX	$359/445/575/329

ACCESSORIES

AB Switchbox	$40
CA P15 Power Director	$100
Kensington Masterpiece Plus	$110
Keytronics 101 Keyboard	$100
Printer Cable 6'/10'/20'	$20/25/60
6 Outlet Surge Protector	$25

MICE

LOGITECH C7 HiRes	$70
LOGITECH PS/2	$69
LOGITECH C7 Serial	$69
LOGITECH C9 HiRes	$85
Microsoft Mouse with paint	$119
IBM Mouse	$85

"We Will Beat Any Price"... Dick

1-800-634-8215

In Illinois Call . . .

1-312-654-4100

SALES AND QUOTES (Outside Illinois): 1-800-634-8215
SHIPPING AND TECHNICAL SERVICE: 1-312-654-4170*
QUOTE-A-FAX: 1-312-325-4969*

- All manufacturer's warranties are good through RP Systems.™
- Corporate accounts call Brian.
- 13.5% APR Lease available.
- Over 4000 products available with $6,000,000.00 inventory in stock.
- IBM AS/400 processes your order within minutes of receipt.
- 24 hour burn in on all CPUs.
- Stock orders placed by 4:00 PM shipped same day.
- Credit cards charged upon shipment only.
- Prices subject to availability and change without notice.
- Prices reflect 3% cash discount.
- Next day delivery available for as little as $8.
- Wire transfer accepted.
- Fraud aggressively prosecuted.
- Restocking charge on returns.
- Educational P.O.'s welcome.
- Corporate terms available
- Prepay and deduct 1%.

*As of November 11, 1989 area code will be changed to 708.

Circle 125 on reader service card

THE CONTROLLER JUNIOR SERIES

(MICROBIZ)

THE RETAIL STORE
THE VIDEO STORE
AUTO REPAIR SHOP

- ☑ BAR CODE COMPATIBLE
- ☑ ADD A CASH DRAWER
- ☑ SINGLE OR MULTI-USER
- ☑ FREE TECHNICAL SUPPORT
- ☑ THE EASIEST/MOST COMPREHENSIVE RETAIL SOFTWARE AVAILABLE

COMPUTERIZE YOUR BUSINESS WITHOUT COMPUTER EXPERIENCE

The MICROBIZ CONTROLLER SERIES is an affordable complete RETAIL POINT-OF-SALE SYSTEM designed especially for your business. Thousands of small businesses are currently using the MICROBIZ CONTROLLER SERIES to assist with inventory control and point-of-sale transactions.

The MICROBIZ CONTROLLER SERIES is extremely flexible. MICROBIZ works the way you run your business. Use it with or without a bar code reader to scan transactions; use it with or without a cash drawer; use it with or without a receipt printer... or, use it with the bar code reader, scanner, cash drawer and receipt printer to form a complete POS (Point-of-Sale System).

For point-of-sale transactions, the operator simply scans the bar code label on merchandise (or enters transactions through the keyboard) and with one keystroke can produce a complete receipt containing a description of the merchandise, quantity, and discounts, if applicable. The average transaction takes only seconds.

As each transaction is completed, the products sold are automatically deducted from the current inventory on hand. At any time inventory levels can be checked for an "up to the minute" status of in stock quantities. Reorder reports are automatically produced for any products where the on hand quantity has fallen below the required inventory level.

NO EXPERIENCE NECESSARY. The MICROBIZ CONTROLLER SERIES was written for new computer users and designed so anyone can learn to use it quickly... and, if you need help, technical service is always FREE.

A COMPLETE POINT-OF-SALE SYSTEM

AT A FRACTION OF THE PRICE. THE RETAIL CONTROLLER, JR. offers most of the features found in the THE RETAIL STORE at a fraction of the price. THE RETAIL CONTROLLER, JR. does not handle accounts receivable, purchase orders and layaway plans. If you find that you need these features, you may update to THE RETAIL STORE COMPLETE EDITION at any future time. Your data is 100% compatible. The transfer is easy.

WE GUARANTEE IT!

If you are not satisfied with any unregistered MICROBIZ product for any reason, you may return it within 30 days for a complete refund.

THE RETAIL STORE

■ 'Pop-up' windows let you select inventory items ■ Pull down menus ■ Suitable for most small Retail stores ■ Track promotional sales ■ Point & Select ■ Multi-level Password protection ■ One Work Screen for all transactions ■ Item or Invoice discounts ■ View 'in stock' condition from Work Screen ■ Refund reports ■ Daily close-out report ■ Automatic price lookup (for invoices) ■ Promotional price lookup ■ Set limited time promotions ■ Accepts manufacturers bar codes ■ Accepts split tender ■ Automatically calculate change ■ Track inventory by size/color/style ■ Flexible tax percentages ■ Reorder reports ■ Receiving reports ■ Bin labels ■ Track sales by salesperson ■ Take markdowns by SKU or Department ■ Sales reports: Department, Employee, Unit sales history, Overall Summary ■ Mailing labels ■ Track customer history ■ Simple price changes ■ Customize features to fit individual business needs ■ Supports bar code readers/cash drawers/keyports ■ Prints on plain paper or custom invoices ■ Links to MICROBIZ bar code printing software ■ Prints 40 or 80 column receipts ■ Links to ACCPAC EASY

THE VIDEO STORE

■ Rentals/sales/returns from one screen ■ Automatically calculates late charges ■ Set different rental rates: Member/Non member, Day of the week, No. tapes rented/day, New Release, Other special price codes ■ Automatically track "free" tape rentals ■ View all tapes a customer currently has checked out ■ Sales and productivity reports by day or for any period ■ Movie list handout ■ Return on investment report ■ Tape income and productivity ■ Overdue rental reports ■ Print mail labels ■ Set up "clubs" ■ View customer history

AUTO REPAIR SHOP

■ Print Work Orders — store info to Work in Progress File ■ Create "package" jobs ■ Charge to house account ■ Automatically markup special order parts ■ Unlimited number of vehicles per customer ■ Bill by job or hourly rate ■ View/print service history ■ Technician productivity ■ Daily parts usage: revenue/margin ■ Daily service income ■ Reminder postcards ■ Inventory reorder report

THE RETAIL CONTROLLER, JR.	$149.95
THE VIDEO STORE CONTROLLER, JR.	$295.00
THE AUTO REPAIR SHOP CONTROLLER, JR.	$295.00
CASH DRAWER	$ 395.00
CASH DRAWER WITH RECEIPT PRINTER	$695.00
BAR CODE READER (Serial or attached to keyboard)	$595.00
ACCPAC EASY GENERAL ACCOUNTING	$ 89.00

(THE CONTROLLER, JR. SERIES AUTOMATICALLY LINKS TO THE ACCPAC EASY GENERAL ACCOUNTING SYSTEM)

CALL FOR DEALER PRICING

Also available:

The Retail Controller (Senior Edition)
The Auto Repair Shop Controller (Senior Edition)
The Video Store Controller (Senior Edition)
The Beauty Salon Controller
The Liquor Store Controller
Multi-user versions of each of the above
Dealer kits for resellers

Microbiz, Controller and the Controller Series are trademarks of Microbiz Corporation

Circle 134 on reader service card

MICROBIZ Corp.

400 Executive Blvd.
Elmsford, N. Y. 10523

Overnight delivery available - Master Card & Visa accepted

1-800-637-8268

Prices subject to change

30 Day money back guarantee

COMPUTER DISCOUNT WAREHOUSE™

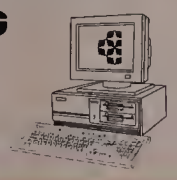
Emerson

CDW™ LETS YOU BRING THE FAMOUS EMERSON EC800 BUSINESS MACHINE HOME

Comes Ready to Use with a 30 Meg Hard Drive Loaded with the Following Software: Menu Magic, Home Accountant, Sidekick, Window Works, Borland Ouattro

CDW™ price **$849.53**
Your Choice of Color or Mono Monitor.
ADD:$199.00 for Color, $84.10 for Mono

SAMSUNG



S-3000, 4.77/10 MHz	$592.11
S-330, 4.77/10 MHz, 1 Floppy	745.50
S-330, 20 Meg/40 Meg	994.95 /1019.52
S-550 AT Comp., 8/12 MHz,	1056.45
S-550, 20 Meg/40 Meg	1425.80 /1499.45
S-800, 386 20 MHz,	2093.69
S-800, 40 Meg/80 Meg	2498.01 /2760.00

WHY PAY RETAIL?

CDW™ Sells For Less

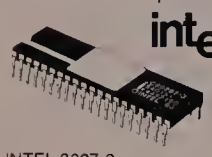
AND **SERVICES** YOU BETTER

intel

INTEL BOARDS & CO-PROCESSORS

INTEL Above Board Plus	$410.68
INTEL Inboard 386/PC	569.53
INTEL Visual Edge	448.39
INTEL Connect Co-processor	712.43

SPEED UP YOUR PC UP TO 500%!



intel MATH COPROCESSORS

		INTEL 80287-8	$206.55
		INTEL 80287-10	223.55
		INTEL 80387-16	389.60
		INTEL 80387-20	390.65
		INTEL 80387-25	541.92
INTEL 8087-2	$119.90	INTEL 80387-SX	362.82
INTEL 8087-3	95.20	INTEL 80387-33	575.20
INTEL 80287-6	137.30	INTEL 80C86-A	395.50

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

COMPUTERS

AST SPECIALS

MDL 70	CALL CDW™	MDL 390C	IN STOCK
MDL 140	FOR ALL	MDL 3150C	& READY
MDL 300C	AST	MDL 386/25	TO SHIP
MDL 340C	PRICING	MDL 386/33	CALL

WORKSTATIONS

AST 105X	ALL AST
AST 386SX Model 5 / Model 45	WORKSTSTIONS
AST Bravo	IN STOCK
SAMSUNG PC TERMINAL/286	$1054.60
EARTHSTATION V40 or 286, Arcnet or Ethernet	CALL

PACKARD BELL

PB1000, 12 MHz	$1219.70	PB900, 12 MHz	$1198.86
PB1000, 40 Meg	$1614.61	PB900, 16 MHz	$1368.70

IBM PS/2

MDL 30, 20 Meg	$1655.17	MDL 55SX, 30 Meg	$2899.59
MDL 60, 40 Meg	3340.15	MDL 55SX, 60 Meg	3178.39
MDL 60, 70 Meg	3644.52	MDL 70, 60 Meg	3747.20
MDL 30286, 1 Dr.	1412.10	MDL 70, 121 Meg	5259.84
MDL 30286, 20 M	1929.50	MDL 80, 40 Meg	4374.40
MDL 50Z, 30 Meg	2876.75	MDL 80, 70 Meg	5069.37

COMPAQ

286, MDL 1	$1549.95	386, 25MHz, Mdl300	$8177.99
286E, MDL 1	1899.50	386-20E, 40 Meg	4298.12
286E, MDL 20	2172.45	386-20E, 100 Meg	4943.22
386E, MDL 40	2453.41	PORT. II, MDL 2	1858.10
386, 20 MHz, 130	5718.33	PORT. II, MDL 4	2697.42
386, 25 MHz 60	5588.90	PORT. III, MDL 20	3495.85
386S, MDL 1	2324.49	PORT. III, MDL 40	3999.35
386S, MDL 20	2783.12	PORT. 386, MDL 40	5426.24
386S, MDL 40	3092.84	PORT. 386 MDL 100	6689.74

TOSHIBA

T-1000	$657.95	T1600	$3237.60
T1200, 2 Drive	1455.74	T5100	4238.78
T1200, 20 Meg	1959.60	T5200, 40 Meg	4943.82
T3100e	2688.76	T5200, 100 Meg	5375.50
T3200	3393.25	CALL FOR ACCESSORIES	

WYSE

MDL 2108	$895.50	MDL 2214	$1921.30
MDL 2112	1271.20	MDL 3216	2060.37

Zenith data systems LAPTOPS

Minisport	NEW!
Supersport 88, 2 Dr/20 Meg	CALL CDW™
Supersport 286, 20/40 Meg	FOR LOWEST
Turbosport 386, 40 Meg /	ZENITH LAPTOP
Turbosport 386, 40 Meg / w/modem	PRICING

DESKTOPS

Z-248 12 MHz	ALL
Z-286LP 12 MHz Mod. 1	ZENITH
Z-386 25 MHz Mod. 1	DESKTOPS
Z-386 33 MHz Mod.1	IN STOCK

TERMINALS

WYSE 50/60 Amber or Green	$373.40 / $300.16
WYSE 85 / 30 Amber	375.90 / 294.10
WYSE 99GT	394.82

PLOTTERS, DIGITIZERS & SCANNERS

CalComp

1023	$3745.38	12 x 12	$358.12
1043	6477.15	12 x 18	719.10
1044	9915.06	36 x 48	3236.15

HURTA

1212IS1	$349.06	36 x 48	$2891.53
12 x 17	499.35	4 Button Cursor	75.00

LOGITECH

Scanman PC	$168.89	Scanman PS/2	$225.50

Summagraphics

12 x 12	$367.40	12 x 18	$599.50

HEWLETT PACKARD

HP7440A	$968.30
HP7475A	1389.89
HP7550	2926.56
HP7570 LOWEST PRICE	
HP7576-EXL	CALL
HP SCANJET +	1049.66

HOUSTON INSTRUMENT

HI DMP-52 / DMP-52MP
HI DMP-56A
HI DMP-61
HI DMP-62
Image Maker

PRINTERS

EPSON

LX810	CALL	LO510	ALL EPSON
LQ850	CDW™	LO950	MODELS
FX850	FOR BEST	LO1050	READY
FX1050	PRICE EVER	LO2550	TO SHIP

CDW™ stocks all cut sheet feeders and ribbons.

NEC

P2200	$344.65	P5300	$685.63
P5200	509.12	P960XL	1039.24

DICONIX by KODAK

150P /300	$309.17 / 475.17

TOSHIBA

321SL	$468.95	Expresswriter 311	$377.16
341SL	592.84	Expresswriter 301	328.84
351SX	949.95	CALL FOR ACCESSORIES	

brother

M-1724L	$579.64	M-1709	$384.47
HR20	340.60	HR40	629.12

OKIDATA

ML 182 Turbo	$234.48	ML 321	$479.28
ML 172	199.95	ML 390	475.96
ML 380	NEW	ML 391	639.48
LASERLINE 6	1292.69	ML 393	995.90
ML320	329.68	ML 393 Color	1067.60

Panasonic

1124	$339.18	1592	$142.44
1595	453.45	3131	318.30
1180	193.95	1524	562.10
1191	232.12	CALL FOR ACCESSORIES	

LASER PRINTERS

BROTHER HL-8e	$1799.90
H-P LaserJet Model 2 / IID	1699.95 / 2744.95
H-P Deskjet	599.00
NEC LC890	3095.60
PACIFIC DATA 25 in 1 Cartridge	283.86
TOSHIBA Page Laser 12	2479.58

#1

- Sales
- Services/Support
- Product Knowledge
- On Time Delivery
- Frequent Buyers Program

DRIVES, TAPES & CARDS

FLOPPIES, DRIVES & TAPES

CONNER 40 Meg / 110 Meg	$445.29 / 825.29
GENOA 60 Meg Int. Tape / Ext. Tape	689.60 / 819.10
GENOA 150 Meg Int. Tape	1078.85
IOMEGA 20+20 External 8"	1658.92
IOMEGA B1441/B144X	998.65 / 1299.10
IOMEGA B244X/B120X	1990.25 / 992.80
IOMEGA B220X, External 5.25"	1619.40
IRWIN 20 M / 40 M Internal Tape	399.10 / 539.20
MICROPOLIS All Models	CALL
MOUNTAIN 4440 Int. / Ext	385.80 / 557.75
MOUNTAIN 150M Filesafe	1398.39
PLUS Passport 20 / 40	479.10 / 579.88
PLUS 20 & 40 System Kit	489.75
PLUS PS/2 MC System Kit	585.58
PLUS DEVELOPMENT 20 Meg	$527.44
PLUS DEVELOPMENT 40 Meg	677.80
PRIAM 40 Meg / 60 Meg	669.55 / 749.95
SYSGEN 5.25" Ext. Floppy	225.25
WELTEC 5.25 External Floppy	207.77

MiniScribe

MIN-8425	$239.40	MIN-3085	$729.40
MIN-8438	299.85	MIN-6085	599.52
MIN-3053	599.95		

Seagate

SEAGATE 20 Meg	$265.58	SEAGATE 4096 80	559.95
SEAGATE 30 Meg	279.32	SEAGATE ST-251-1	325.23

STORAGE DIMENSION

150 Meg	$1899.80	320 Meg Internal	$2317.88
320 Meg Subsystem	2995.72	520 Meg Internal	5852.97

NOVELL NETWORKING

SOFTWARE STARTER KITS

Entry-Level 286 Starter Kit, 4 Users	$429.90
Entry-Level 286 Starter Kit, 8 Users	899.89
NOVELL 286 Software V. 2.15	1839.65
NOVELL SFT Netware V. 2.15	2986.60
NOVELL NETPRO	1120.50

INTERFACE CARDS

3COM ETHERLINK	$375.45
ARCNET PC110 LANboard PS/2	412.50
ARCNET PC130 LANboard	164.27
ARCNET PC130E LANboard	189.50
ARCNET SMC 16-Bit File Server Board	437.55
ARCNET SMC 16-Bit Workstation Board	359.25
ETHERNET Interface Connector (NE1000)	298.90
ETHERNET Plus Board (for 286) (NP600)	635.35
G-NET Interface Card w/Cable	298.52
NOVELL NE2000	394.15
THOMAS CONRAD 16 Port Hub	814.25
THOMAS CONRAD 8 Port Hub	378.65
Ethernet Terminators	39.50

Novell trained and authorized sales and support. See WORKSTATIONS under Computers.

MODEMS & COMMUNICATIONS

EVEREX 1200B / 2400B	$97.90 / 184.15
EVEREX 2400 Ext. / 2400 PS/2	199.80 / 205.45
INTEL 2400 Internal	149.75
INTEL 2400 External	176.94

HAYES

HAYES 1200	$278.60	2400B	$378.45
1200B	269.20	2400PS2	387.15
2400	416.08	Personal Modem	109.70

U.S. Robotics

Courier 1200	$278.60	1200 External	$129.10
Courier 2400	279.60	2400B	199.70
1200B	108.45	14,400 HST	645.20
Dual 14,400 HST	978.65		

MHz MEGAHERTZ CORPORATION

2400 for ZENITH	$167.10	1200 for COMPAQ SLT	$259.80
2400 for NEC	225.88	2400 for TOSHIBA	183.74

BATTERY BACKUP & SURGE

AMERICAN

AME-1200VX	$911.45	AME-520ES	$377.48
AME-330XT	257.72	AME-800RT	699.19
AME-450AT	321.82		

DataShield

500 Watt	$555.05	SS700+	$787.90
800 Watt	628.56	1200 Watt	962.75
S100	59.55	6 Outlet Surge	27.85

Durant Technologies, Inc.

BPS-300	$330.10	BPS-550	$499.85
BPS-500	465.11	BPS-1200	682.65

TRIPP LITE

BC-450	$349.50	4 Outlet	$44.25
BC-1200	649.55	LC-1200	158.85
BC-2000	1179.80	LC-1800	196.80

MISC. & ACCESSORIES

A-B Switching Box (Parallel or Serial)	$39.95
BASF 5 Pack of 10 DS/DD w/Case	29.00
INTELLICOM Long Link	129.70
KENSINGTON Masterpiece	99.99
KENSINGTON Masterpiece Plus	123.40
KEYTRONICS 5151 IBM or AT&T	133.95
KEYTRONICS 101	94.95
5TH GEN. Logical Connection 256K / 512K	447.72 / 514.36
Electronic 4-Way Switchbox	89.85
XT Power Supply 150 Watt	59.00

FAX MACHINES AND BOARDS

CompleteFax 9600	$399.50	SHARP FO-220	$854.48
Quadram JT-Fax 9600	527.65	SHARP FO-300	1199.10
Quadram JT-Fax Port	329.25	SHARP FO-330	1085.7

SOFTWARE

WORDPERFECT 5.0 5.25" / 3.5"	$229.90 / 238.90
ASHTON TATE dBase III+ / dBase IV	424.00 / 476.10
ASHTON TATE Multimate Advantage II	288.12
LOTUS 1-2-3 5/25" / 3.5" V2.2	339.95
LOTUS 1-2-3 V.3 / LOTUS Networker	337.00 / 1592.20
BORLAND Paradox 3.0	439.17
BORLAND Ouattro / Sidekick +	149.52 / 131.25
MICROSOFT Excel / Windows 386	252.50 / 129.05
MERIDIAN Carbon Copy	119.37
SYMANTEC O&A	217.40
SOFTWARE PUB. Harvard Graphics	274.71
XEROX Ventura Software Version 2.0	479.00

MONO MONITORS & CARDS

CDW™ Color / Mono Cards w/P	$99.00 / 89.00
HERCULES™ Color / Mono Cards w/P	146.14 / 179.84
AT&T Monochrome Monitor	189.40
AMDEK 410A / 1280	149.99 / 679.78
COMPAO Mono / VGA Mono	167.00 / 209.95
IBM PS/2 8503	209.95
SAMSUNG Amber	84.10
NEC Monograph	1297.25
PGS MAX 12E / MAX 15	139.40 / 258.20
PACKARD BELL Green or Amber	89.95

COLOR GRAPHIC MONITORS

IBM PS/2 8512	$449.40
IBM PS/2 8513	540.20
SAMSUNG RGB Color	199.00
MAGNAVOX 8762	259.05

VGA & EGA PRODUCTS

VGA & EGA MONITORS

COMPAO VGA Monitor	$548.68
MAGNAVOX 943EGA / 9CM062	365.40 / 372.52
MITSUBISHI 1409 / 1410	282.44 / 385.50
MITSUBISHI 1381 Diamond Scan	519.20
NEC Multisync II Plus	888.10
NEC Multisync XL 19-Inch	2080.40
NEC Multisync 2A / Multisync 3D	487.85 / 687.85
PACKARD BELL 8541 VGA	319.20
PACKARD BELL 8524 Enhanced VGA	389.95
PACKARD BELL 8526 Multisync	477.40
PGS Ultrasync 12	493.33
PGS Ultrasync 14 / 16	519.66 / 887.77
SONY Multiscan 1302 / 1303	619.95 / 548.52
ZENITH Z-1490	554.80

VGA DISPLAY CARDS

ATI VGA Wonder 256	$262.98
ATI VGA VIP	232.24
GENOA 5200 / 5300	305.55 / 273.20
RENAISSANCE RVGA II / RVGA I	239.89 / 192.05
PARADISE VGA / VGA + 16	220.68 / 288.33
VIDEO 7 VGA	257.15
VIDEO 7 Fast Write	312.15
VIDEO 7 VRAM VGA	434.25

EGA DISPLAY CARDS

GENOA Super EGA Hi-Res 800 x 600	$243.40
PARADISE Auto Switch EGA 480	188.88
VIDEO 7 Vega Deluxe	219.74

CAD MONITORS & CARDS

MITSUBISHI 6905, 19-Inch	$2320.90
MITSUBISHI 3905L80K	1835.62
MITSUBISHI 390580K	1798.80
SIGMA Laserview	1687.18
VERMONT Cobra	2777.75
METHEUS 1104	1039.00

MICE

LOGITECH C9 Serial /PS/2	$89.95
LOGITECH BUS	94.99
MICROSOFT Mouse (Bus Version)	109.34
MICROSOFT Mouse (Serial Version)	117.25
MICROSOFT Mouse w/Windows	138.37
MOUSE SYSTEMS (Serial Version)	99.55
MOUSE SYSTEMS (Bus Version)	108.77

MOST ORDERS RECEIVED BY 5:00 P.M. C.D.T. SHIP SAME DAY

HIGH VOLUME BIDS INVITED
2840 MARIA, NORTHBROOK, IL 60062 FAX (312) 291-1737

PC Magazine says..."You may find a better deal here than anywhere else."

WHY WAIT? CALL COMPUTER DISCOUNT WAREHOUSE™ NOW!

PW89

WE SELL NAME BRAND ITEMS FOR LESS!

CDW™ EXTENDED HOURS
Sales 7:30-7:30 CDT Mon-Fri.
9:00-3:30 CDT Sat.
Tech Support 9:00-5:00 CDT Mon-Fri.

Credit Card charges are not submitted until time of shipment. Shipping and handling additional. On all hard drive orders under $200.00 please add $5.00 handling fee. Non defective returns subject to restocking fee. All prices reflect 3% discount for cash. Allow 10 business days for shipping when paying by personal check. Software, chips and other electronic components are not returnable. All pricing subject to change.
Registered trademarks of IBM and COMPAQ

CDW CIRCLE OF SERVICE™

(800) 233-4426

In Illinois (312) 498-1426
FAX (312) 291-1737
NEW AREA CODE 708 — EFFECTIVE 12/1/89

MEMBER MMC MICROCOMPUTER MARKETING COUNCIL of the Direct Marketing Association, Inc.

PHWEEK CORPORATE SERVICE GUIDE MEMBER

Credit card charges are not submitted until time of shipment.

VISA DISCOVER MasterCard AMERICAN EXPRESS CDW

Apply for the **CDW™** Credit Card

Circle 200 on reader service card

Apply for the **CDW™** Credit Card

MONTGOMERY GRANT

OUTSIDE USA & CANADA.....CALL
(718)692-0790

For Customer Service
Call Mon-Thurs:9:30am-4:30pm
Fri:9am-3:30pm (718) 692-1148

Retail Outlet: Penn Station, Main Concourse
(Beneath Madison Square Garden) New York City, NY, 10001
Store Hours: Mon-Thurs, 8:30am-8pm/ Fri,8:30am-3pm/ Sat,-Closed /Sun,9:30am-7pm
FOR ORDERS & INFORMATION IN USA & CANADA CALL TOLL FREE

1-800-759-6565

OR WRITE TO:
Montgomery-Grant Mail Order
Department, P.O. Box 58,
Brooklyn, N.Y., 11230

FAX NO. 7186923372
TELEX 422-132 MGRANT

EXTENDED HOLIDAY SEASON ORDER HOURS: Mon-Thur 8:30am-8pm/Fri 8:30am-4pm/Sat, CLOSED/ Sun, 9:30am-6:00pm
NO SURCHARGE FOR CREDIT CARD ORDERS / WE INVITE CORPORATE AND EDUCATIONAL CUSTOMERS
CORPORATE LEASING & PERSONAL FINANCING AVAILABLE /DISCOUNTS FOR QUANTITY ORDERS/TOLL FREE TECHNICAL SUPPORT

EPSON EQUITY 1+
IBM XT COMPATIBLE
• 640K RAM w/Clock Calendar • 4.77 - 10 MHz. • 360K Drive • Serial & Parallel Ports • MS DOS 3.3 • GW Basic
$619
SAME w/SEAGATE 20MB HARD DRIVE.....$869
SAME w/SEAGATE 30MB HARD DRIVE.....$899
SAME w/SEAGATE 40MB HARD DRIVE.....$969
SAME w/TWO 360K FLOPPIES.....$669
EPSON EQUITY 1e.....$729

EPSON EQUITY II+
IBM AT COMPATIBLE
• 640K RAM • 80286 Microprocessor 1.2MB Floppy Drive • Serial & Parallel Ports • MS DOS 3.3 • GW Basic
$999
SAME w/SEAGATE 20MB HARD DRIVE.....$1249
SAME w/SEAGATE 30MB HARD DRIVE.....$1279
SAME w/SEAGATE 40MB HARD DRIVE.....$1349

EPSON EQUITY 386/20
• 80386 Microprocessor 20MHz • 1MB RAM Expandable to16MB • 1.2MB Floppy Drive • MS DOS 3.3 • GW Basic
$2349

WE CAN RECONFIGURE ANY OF OUR COMPUTER PACKAGES TO FIT YOUR SPECIFICATIONS. CALL FOR INFORMATION. ALL COMPUTER SYSTEMS SUPPORT MDA, CGA, EGA, VGA, & MULTISCAN.WE CARRY MODEMS, HARD DRIVES, CARDS, MONITORS, MEMORY UPGRADES & ALL OTHER ACCESSORIES FOR YOUR COMPUTER.

LEADING EDGE MODEL D
IBM XT COMPATIBLE PKG.
512K RAM Expandable to 768MB • 8088-2 Microprocessor • 360K Floppy Drive • 4.77-7.16 MHz. • MS DOS 3.3 & GW Basic • 12" Monitor
$599
SAME w/SEAGATE 20MB HARD DRIVE.....$829
SAME w/SEAGATE 30MB HARD DRIVE.....$869
SAME w/SEAGATE 40MB HARD DRIVE.....$929

LEADING EDGE MODEL D2+ w/30MB.....$1599

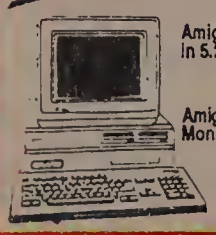
AST 286 *IBM AT COMPATIBLE*
80286 Processor • 512K Expandable to 4MB • 1.2MB Floppy Drive • Serial & Parallel Ports • Video Card
$799
SAME w/SEAGATE 20MB HARD DRIVE.....$1049
SAME w/SEAGATE 30MB HARD DRIVE.....$1079
SAME w/SEAGATE 40MB HARD DRIVE.....$1149
AST PREMIUM 286 MODEL 70.....$1199
AST PREMIUM 386/16 MHz.....$2199
AST 386/25 MHz.....$3475
AST 386/33 MHz.....$4199

LAPTOP COMPUTERS

AMSTRAD PPC-512 512K, 1 FLOPPY.....$499
AMSTRAD PPC-640,640K, 2 DRIVES, MODEM.....$699
TOSHIBA 1000.....$635
TOSHIBA 1600.....$3179
TOSHIBA 1600 w/40MB.....$3569
TOSHIBA 3100e.....$2699
TOSHIBA 1200H.....$1849
TOSHIBA 1200HB.....$1999
TOSHIBA 3200.....$3399
TOSHIBA 5100.....$4199
TOSHIBA 5100 w/100MB.....$4799
TOSHIBA 5200.....$4899
TOSHIBA 5200 w/100MB.....$5299
NEC ULTRALITE 2MB.....2279
NEC MULTISPEED HD.....$1949
NEC PROSPEED 286-20MB.$3099
NEC PROSPEED 286-40MB.$3299
NEC PROSPEED 386 w/40MB.....$4499
ZENITH 184 w/2 FLOPPIES..$1469
ZENITH 184-2 w/20MB.....$2199
ZENITH 286 w/20MB.....$2999
SPARK EL.....$849
COMPAQ SLT 286-20.....$3799
COMPAQ SLT 286-40.....$4199
BONDWELL 286-20.....$2169

MODEMS, EXTERNAL DRIVES, & ACCESSORIES AVAILABLE FOR ALL LAPTOPS.

AMIGA 500 2000 2500 COMPUTERS



Amiga 500 w/Built-In 5.25" Drive **$549**
Amiga 500 w/1084 Monitor **$829**
Amiga 2000 H.D. **$2099**
Amiga 2000 w/ Built-in 3.5" Drive **$1459**
Amiga 2500 **$3299**
Amiga 1084 RGB Monitor **$289**
Amiga 1010 Disk Drive **$179**

PRINTERS

STAR
NX-1000.....$164.95
NX-1000 RAINBOW.....$214.95
NX-2400.....$284.95
XR-1000.....$339.95
XR-1500.....$429.95
XR-2410.....$429.95
XR-2415.....$549.95

CITIZEN
180 D.....$149.95

DICONIX
150+.....$329.95

OKIDATA
OKIMATE 20.....$139.95
OKIDATA 180+.....$219.95
OKIDATA 183.....$249.95
OKIDATA 320.....$319.95
OKIDATA 321.....$459.95
OKIDATA 390.....$439.95
OKIDATA 391.....$599.95

EPSON
FX-1050.....$429.95
FX-850.....$334.95
LQ-510.....$329.95
LQ-850.....$509.95
LQ-950.....$569.95
LQ-1050.....$719.95
LQ-2550.....$899.95
LX-810.....$179.95

NEC
P-2200.....$319.95
P-5200.....$489.95
P-5300.....$649.95

PANASONIC
KXP-1092I.....$289.95
KXP-1524.....$519.95
KXP-1595.....$409.95
KXP-1124.....$309.95
KXP-1180.....$177.95
KXP-1191.....$229.95
KXP-3131.....$294.95

TOSHIBA
301.....$329.95

SANYO PR-3000
DAISY WHEEL.....$59

HEWLETT PACKARD
DESKJET.....$599
DESKJET PLUS.....$679
PAINTJET.....$959

LASER PRINTERS

HP LASERJET SERIES II
$1629
1MB EXPANDER.....$279
2MB EXPANDER FOR LASERJET II.....$399
4MB EXPANDER.....$699
HP LASERJET IID.....$2799
PANASONIC KXP-4450.....$1349
BROTHER HL-8E.....$1859
BROTHER HL-8EPS.....$3199

MONITORS
MAGNAVOX EGA.....$319
w/EGA Card.....$449
MAGNAVOX VGA.....$349
w/VGA Card.....$539
ZENITH 1490.....$629
NEC MULTISYNC IIA.....$509
NEC MULTISYNC IIID.....$619
PARADISE VIDEO CARDS.....IN STOCK!

NEC POWERMATE 286
IBM AT COMPATIBLE
80286 Microprocessor • 10 Mhz. • 512K RAM Expandable to 16MB • 1.2MB Floppy Drive • Serial & Parallel Ports • MS DOS 3.3 & GW Basic
$899
SAME w/SEAGATE 20MB HARD DRIVE.....$1149
SAME w/SEAGATE 30MB HARD DRIVE.....$1179
SAME w/SEAGATE 40MB HARD DRIVE.....$1249

NEC POWERMATE 286 PLUS
IBM AT COMPATIBLE
1MB RAM Expandable to 16MB • Zero Wait State • 8-12 MHz. • 1.2MB Floppy Drive • Serial & Parallel Ports • MS DOS 3.3 GW Basic • 80286 Microprocessor • VGA
$1149
SAME w/SEAGATE 20MB HARD DRIVE.....$1399
SAME w/SEAGATE 30MB HARD DRIVE.....$1439
SAME w/SEAGATE 40MB HARD DRIVE.....$1499

NEC POWERMATE 386 SX PLUS
80386 SX Microprocessor • 2MB RAM Expandable to 16 MHz. • 1.2MB Floppy Drive • Serial & Parallel Ports • MS DOS 3.3 • VGA
$1699
NEC HARD DRIVE PACKAGES AVAILABLE
NEC POWERMATE 386/20.....$2899

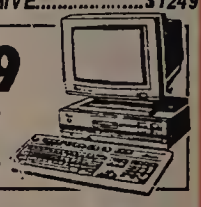
VENDEX HEADSTART III
8-12 MHz. • 1MB RAM • 5.25" 1.2MB Floppy Drive 3.5" 1.44MB Floppy • 30MB Hard Drive • VGA/EGA/CGA/ MDA Included • Serial & Parallel Ports • Mouse MS DOS 3.3 • 12" VGA Monitor
$2099
$1000 SOFTWARE INCLUDED

Panasonic FX-1750
640K RAM Expandable to 768K • 3.5" 720K Floppy • 80286 Microprocessor • Parallel & Serial Ports • MS DOS 3.3 and GW Basic
$699
SAME w/SEAGATE 20MB HARD DRIVE.....$949
SAME w/SEAGATE 30MB HARD DRIVE.....$979
SAME w/SEAGATE 40MB HARD DRIVE.....$1049

IBM PERSONAL SYSTEM 2
ALL MODELS IN STOCK.....CALL
5.25" 360K EXTERNAL DRIVE for IBM PS/II-30.....$129
PACIFIC RIM 5.25" 1.2MB EXTERNAL DRIVE for IBM PS/II.....$259

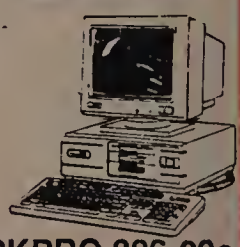
HYUNDAI MODEL 286E
640K RAM Expandable to 1MB • 80286 Microprocessor • 12 MHz. • 1.2MB Floppy Drive • Serial & Parallel Ports MS DOS 3.3 • GW Basic
$899
SAME w/SEAGATE 20MB HARD DRIVE.....$1149
SAME w/SEAGATE 30MB HARD DRIVE.....$1179
SAME w/SEAGATE 40MB HARD DRIVE.....$1249

EVEREX STEP 386 IS
386 SX Microprocessor • 16MHz. 1MB RAM • 1.2MB Floppy Drive
$1799
EVEREX 386/20 MHz.....$2899
EVEREX 386/20MHz. w/4MB.....$3799
EVEREX 386/25 MHz.....$3499



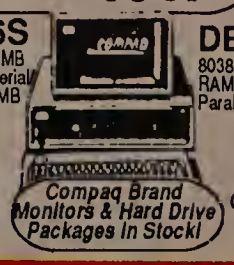
apple IIGS COMPUTER PKG.
Apple IIGS Computer • 512K Upgrade RGB Color Monitor • Apple 3.5" Disk Drive
$1499
IMAGEWRITER II PRINTER.....$439
ALL OTHER APPLE MODELS.....CALL

COMPAQ DESKPRO 286
640K Expandable to 2.1MB • 8-12MHz. 80286 Microprocessor • 1.2MB Floppy Drive • Serial/Parallel Ports
$1629
SAME PKG. w/SEAGATE 20MB.....$1879
SAME PKG. w/SEAGATE 30MB.....$1919
SAME PKG. w/SEAGATE 40MB....$1979



COMPAQ 286e **$1849**

DESKPRO 386S
80386 SX Microprocessor • 1MB RAM Expandable to 13MB • Serial/ Parallel Ports • 16 MHz. • 1.2 MB Floppy Drive
$2399
COMPAQ 386/33 W/84MB
$7499



Compaq Brand Monitors & Hard Drive Packages In Stock!

DESKPRO 386-20e
80386 SX Microprocessor • 1MB RAM Expandable to 16MB • Serial/ Parallel Ports • 20 MHz. • 1.2 MB Floppy Drive
$3699
CUSTOM CONFIGURATIONS AVAILABLE FOR ALL COMPUTERS

RUSH SERVICE AVAILABLE. CALL FOR DETAILS.

Certified Check,Bank Check, Money Orders, Approved P.O.s, Visa , Mastercard, Am-Ex, Diner's Club, Carte Blanche, & C.O.D.s accepted. Please call before submitting P.Os. No additional surcharge for Credit Card orders. Non-certified checks must wait 4-6 weeks for clearance. N.Y. residents add applicable sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors. Return of defective merchandise must have prior return authorization number or returns will not be accepted. IBM/XT/AT are registered trademarks of International Business Machines Corp. Please add 5% shipping & handling. Volume orders over $2000 are discounted to 3% shipping and handling (Canadian orders please add additional 5%). APO/FPO orders please add 10% shipping and handling. All APO/FPO orders are shipped first class priority air. All orders can be shipped Air Express. Call for details. DCA #800233

The Best For Less

$3.50
Per Disk/10 or more

Easy to use Software for IBM PC's and compatibles

$4.00
Per Disk/less than 10

FEDERAL EXPRESS STANDARD OVERNIGHT SERVICE ONLY $5!*

- **ALL orders shipped same day!**
- **Free shipping on all orders of 5 disks or more!**
- **Easy to use instructions on each disk!**
- **We always ship the latest versions!**
- **No membership fees!**

Unconditional Money Back Guarantee!

ACCOUNTING

- ☐ **Financial Consultant 4.2** — An excellent accounting program for home or office.
- ☐ **Medlin Accounting** — Complete with Gen. Ledger, Accounts Receivable, Accounts Payable & Payroll.
- ☐ **Painless Accounting 3.0 (3 disks)** — An easy to use accounting program that's loaded with features! (HD)
- ☐ **Small Business Accounting 1.5** — An excellent accounting program designed for small businesses.

BUSINESS/HOME

- ☐ **Blakbook** — A handy program that will keep track of your addresses and print out nice address books.
- ☐ **Express Check 3.0** — A great program to manage your checking accounts!
- ☐ **Home Inventory 3.4** — Helps you keep track of everything you own. Great for insurance.
- ☐ **Ticklex 5.1** — Great tickler program for appointments, deadlines, reminders and timetables. Can handle up to five people at once. (HD)

DATABASE/SPREADSHEET

- ☐ **Wampum** — An excellent dBase clone with menus.
- ☐ **Instacalc 2.5** — Memory-resident, Lotus-compatible spreadsheet. ("Editor's Choice" — PC Magazine!)
- ☐ **PC-Calc+ (3 disks)** — A very powerful spreadsheet.
- ☐ **Qubecalc 3.02** — Lotus-compatible multi-dimensional spreadsheet. ("Editor's Choice" — PC Magazine!)

EDUCATION

- ☐ **Amy's First Primer 1.7** — Six different learning programs for children ages 4-8. (CGA)
- ☐ **Bible-Q 4.0** — Test your bible knowledge with this fun and educational program.
- ☐ **Funnels and Buckets** — A fun way to teach children basic math skills! (CGA)
- ☐ **Play 'n' Learn 2.03** — A collection of six programs for children 18 months to 4 years. (CGA)
- ☐ **Typing Teacher** — This disk contains 3 programs designed to improve the speed & accuracy of your typing!
- ☐ **World 2.93** — The ultimate globe! Learn about cities, countries and continents with this computer version of the globe. (CGA)

GAMES

- ☐ **Arcade Games 1** — Pac-man (3 versions!), Hopper, Space Invaders, Janitor Joe and others. (CGA)
- ☐ **Arcade Games 2** — Q-Bert, Donkey Kong, Mario Bros., Breakout, Beast and others. (CGA)
- ☐ **Arcade Games 3** — Striker, Space War and Quantoids. (CGA)
- ☐ **EGA Cunning Football 2.3** — The best football simulation anywhere. EGA or VGA Graphics required.
- ☐ **EGA Games** — A collection of the best EGA games including EGAroids, Reflex, Aldo, Flees and others. EGA or VGA Graphics required.
- ☐ **Monopoly** — A great rendition of the classic game. Great color and sound! (CGA)
- ☐ **Pinball** — A collection of several different pinball games. (CGA)
- ☐ **Strategy Games** — Risk, Othello, Chess, Nyet (Tetris clone), and others. (CGA)
- ☐ **Star Trek Games** — Three great games on one disk! An arcade game, standard Star Trek game, and a trivia game.

(CGA) Requires Color Graphic Adapter
(HD) Requires Hard Disk

FEDERAL EXPRESS

* **Federal Express** orders received by 1:30 p.m Pacific time (4:30 p.m. Eastern) are guaranteed delivery by 4:30 p.m of the next business day. (contiguous 48 states). Phone number, street address, and zip code are required for Federal Express delivery. We cannot Fed Ex. COD

OUR LATEST AND GREATEST! RS DISK PICKS

- ☐ **Banner & Sign Makers** — A collection of programs to make banners or signs for any occasion. Works with any printer.
- ☐ **Computer/DOS Tutor 4.4** — Learn how to use your computer and DOS easily and correctly with this very educational program. A must for anybody trying to learn about computers!
- ☐ **Ed's Chess** — The best chess game anywhere. (It beat Chessmaster 2000 easily!) Also, this game does NOT require graphics!
- ☐ **Formgen 3.3** — A very versatile form generator. Make any kind of form for business or home on any printer! (Better than EZ Forms Executive!)
- ☐ **Graphic-Less Games** — A great collection of games that don't require color or graphics. (They will work on ANY system!!)
- ☐ **The DOS Learning System** — Learn how to use DOS with this great tutorial. covers all versions of DOS through 3.3.
- ☐ **Miramar Flight Simulator** — Go to Top Gun Flight School and pilot an F-18 into combat with this fun program. Complete with Sidewinder missiles, radar, and realistic 3-D cockpit. (CGA)
- ☐ **PC-File:dB (3 disks)** — The latest version of an excellent dBase compatible data base program. Very powerful! (HD)

WORDPERFECT 5.0 UTILITIES

NEW

- ☐ **WordPerfect 5.0 Learning System (2 disks)** — Learn WP 5.0 easily and quickly with this great tutorial (WP 5.0 is NOT required).
- ☐ **WordPerfect 5.0 Macros (2 disks)** — Hundreds of macros for WP 5.0.
- ☐ **WordPerfect 5.0 Menu/Mice (2 disks)** — Menu systems, mouse drivers.
- ☐ **WordPerfect 5.0 Tools (2 disks)** — A collection of 17+ utilities.
- ☐ **WordPerfect 5.0 Art/Graphics (2 disks)** — Dozens of clipart images.
- ☐ **PC-Draft III (2 disks)** — Create graphic files (in .WPG format) for WP 5.0. Includes dozens of images to help get you started. (CGA) (HD)

Order Toll Free (800) 876-3475

Name _____
Business _____
Address _____
City / State / Zip _____
Phone _____
Disk Size: ☐ 5¼" ☐ 3½" (add $1 per disk)
No. Disks _____ x $ _____ = $ _____
Shipping: ☐ 1-4 disks ($2) $ _____
☐ 5 or more disks FREE!
U.S. Only { ☐ Federal Express, contiguous 48 states (add $5) $ _____
☐ UPS 2nd Day Air (add $3.00) $ _____
☐ COD (add $4, no Federal Express) $ _____
☐ Foreign (add $4) $ _____
TOTAL ORDER: $ _____
Method of payment: ☐ Check/Money Order Enclosed ☐ VISA ☐ MasterCard ☐ COD
Please make checks payable in U.S. funds.
Card No. _____
Exp. Date _____ Signature _____

Reasonable Solutions
2101 West Main, Medford, Oregon 97501

GRAPHICS

- ☐ **Flowdraw 2.0 (2 disks)** An excellent drawing program with a multitude of features! (CGA) (HD)
- ☐ **PC-Key-Draw 3.52 (3 disks)** — An exceptionally powerful graphics program. (CGA) (HD)
- ☐ **PC-Key-Draw Library** — A large collection of ready made graphics for PC-Key-Draw.

MISCELLANEOUS

- ☐ **Brother's Keeper 4.3 (2 disks)** — Excellent, full-featured geneaology program that's easy to use.
- ☐ **Easy Project 3.6** — A powerful project manager with lots of features.
- ☐ **Kwikstat 2.0 (2 disks)** — A complete, easy to use statistics package.
- ☐ **Pianoman 4.0** — Create and play music on your PC! Lots of fun!

UTILITIES

- ☐ **Automenu 4.5** — Latest version of the most popular menuing program of all time!
- ☐ **Backup Whiz 2.1** — Backup your hard-disk quickly and safely with this easy to use program.
- ☐ **Best DOS Utilities** — Essential utilities for DOS. File finders, listers and numerous other handy utilities that will save you time. Very easy to use!
- ☐ **Epson Utilities (2 disks)** — A collection of utilities for Epson and Epson compatible printers.
- ☐ **Help/Pop-Help** — A program that will help you with any DOS command. Very popular and educational.
- ☐ **Hercules Utilities** — A collection of utilities for Hercules graphics cards. Includes SIMCGA.
- ☐ **Mr. Label 4.1** — A very powerful and versatile labeling program.
- ☐ **Newkey 5.2** — The latest version of the best keyboard macro program available. ("Editor's Choice" — PC Magazine!)
- ☐ **On-Side** — Allows you to print anything sideways.
- ☐ **PC-Deskteam 2.01** — A Sidekick-like program with even more features!
- ☐ **Professional Master Key** — A collection of utilities like Norton's. Recover erased files easily!
- ☐ **Vaccines and Virus Killers** — A collection of utilities designed to protect your system from viruses! This disk includes Flu-Shot + 1.52.

WORD PROCESSING

- ☐ **PC-Outline 3.34** — An excellent thought outliner! Can also be used as a free-form database. (Resident & Non-Resident versions included!)
- ☐ **PC-Stylist 1.2** — Analyze and improve your writing style.

Some of the programs we sell are "shareware." Shareware programs are copyrighted and require additional payment to the authors if found useful.

Free Catalog of over 200 programs with every order or by request

Order: 800-876-3475
Information: 503-776-5777
FAX: 503-773-7803

VISA MasterCard

We also accept checks, money orders and COD

PCW 11/89

Delivering Excellence in Software, Service & Support

Circle 241 on reader service card

the ultimate XT®

The ULTIMATE XT® represent years of research for an entry level IBM® compatible that is powerful enough to handle complex applications and affordable enough for every household to own.

ULTIMATE XT standard features:

- 8088-10 processore
- Dual 4.77/10MHz operting speeds
- 512K expandable to 640K
- 360K floppy drive
- 8 expansion slots
- Parallel, serial and game ports
- 150 WATT power supply
- 101 keyclick keyboard
- 1 year guarantee on motherboard

12" Monochrome Monitor System **$549**
1063 & D1-MA2565

14" Color Monitor System **$699**
1063 & D1-CK4656

14" EGA Monitor System **$949**
1063 & D1-CM4531

Cardinal Modems

- Hayes compatible
- Last number redial
- *FLASH*link communication Software MNP Error Correction Level 5

"desktalk +" 2400 bps Internal
D1-24FTME **$89**

"desktalk +" 2400 bps External
D1-24DTME **$119**

"desktalk 48" 4800, Internal
D1-48FTM **$179**

"desktalk 48" 4800, External
D1-48DTM **$229**

Panasonic
Office Automation OA

KX-P1124
- 24-pin, 192 CPS-draft,63 CPS-LQ
- 360 x 360 resoltuion for crisp graphics

B1-P1124 ..... **$299**

KX-P1180
- 9-pin, 80 column
- 192 CPS draft, 38 CPS-NLQ

1034 ..... **$174**

KX-P1191
- 9-pin, 80 column
- 240 CPS draft, 48 CPS-NLQ

1035 ..... **$229**

NEC

MULTISYNC 3D
- 1024 X 786 resolution
- Analog/digital input
- .28 dot pitch
- Tilt and swivel base

D1-NEC3D **$599**

MULTISYNC 2A
- 800 x 600 resolution
- Analog input signal
- Tilt and swivel base

D1-NEC2A **$479**

LC-890 Laser Printer
- Prints up to 8 pages per minute
- 300 dpi resolution
- Postscript compatible
- 3MB of memory
- Dual 250 capacity sheet input paper bins
- 35 resident fonts
- Parallel, serial and AppleTalk interface connections **$3099**

Up to 120 MB Tape Backup for XT's & AT's

The Fastest, Most Affordable Tape Backup System You Can Buy!!

COLORADO MEMORY SYSTEMS INC.

- QIC-40 standard
- ***FAST!!!*** Backup 10MB in under 5.5 minutes
- IBM PS/2 PC,AT and XT compatible
- 3.5" conversion kit avilable for PS/2 models 50, 60,80
- Requires DC2000 data cartridge

Internal System D1-JUMBO **$278**

Internal System D1-JUMBO & D1-KE-10 **$378**

Call Toll Free 7 To 7 Central Time Monday Thru Friday – 9 To 2 Saturday

USA FLEX

800-872-3539

FAX # 312-351-72904

Tech./Customer Service 312-351-7172

ORDERING INFORMATION: Minimum Order $100. MasterCard and Visa accepted. No surcharge on credit card orders. Shipping and handling additional. Credit cards not billed until order has been shipped. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. C.O.D orders under $500 add $5.00 special handling charge. C.O.D. order over $500 add $10.00 special handling charge. We ship to the 50 states. APO, FPO, AK and HI add 5% to the total order to cover PAL and insurance. No sales tax outside of IL. All returns must have prior authorization from our Customer Service Department (312) 351-7172. All returns must be packaged in original packing material and include all warranty cards and manuals. Unauthorized returns and refused shipments are subject to a 20% restocking fee. All prices and specifications are subject to change without notice.

135 N. Brandon Drive, Glen Ellyn, IL 60139

EPSON®

WHEN YOU'VE GOT AN EPSON, YOU'VE GOT A LOT OF COMPANY™

FX-850

- 9-pin dot matrix printer
- 290 CPS-high speed draft 54 CPS-NLQ, bidirectional logic seeking printing
- 240 x 216 dpi
- 8K memory buffer
- FX-850 80-column

CALL

©Copyrighted 1989 Epson America.
Epson is a registered trademark of Seiko Epson America

FX-1050

CALL

- 9-pin dot matrix printer
- 290 CPS-high speed draft 54 CPS-NLQ, bidirectional logic seeking printing
- 240 x 216 dpi
- 8K memory buffer
- FX-1050 136 column

LQ-2550

- Wide carriage, 24-pin impact dot matrix printer
- 136 columns
- 400 CPS-draft, 133 CPS-LQ
- 7 color printing

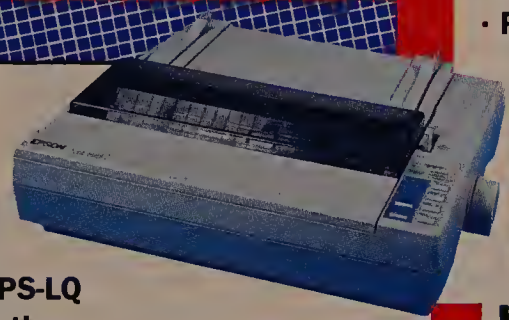
CALL

LQ-850

- 24-pin dot matrix printer
- 264 CPS-draft, 88 CPS-LQ
- LQ-850 80columns
- 6K memory buffer
- Parallel and serial interfaces

CALL

LQ-510



- 24-pin
- 225 CPS-draft, 75 CPS-LQ
- 360 x 360 dpi resolution
- SmartPark paper handling feature

CALL

LX-810

- 9-pin printhead
- 80 columns
- 180 CPS-draft, 30 CPS-NLQ
- Parallel interface
- 240 x 216 dpi graphic resolution

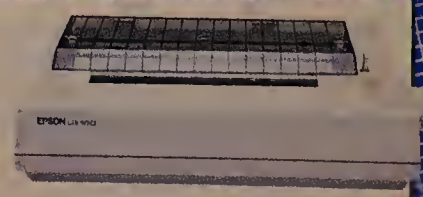
CALL

LQ-1050

CALL

- 24-pin dot matrix printer
- 264 CPS-draft, 88 CPS-LQ
- LQ-1050 136 columns
- 6K memory buffer
- Parallel and serial interfaces

LQ-950



- Mid-size carriage, 24-pin printhead
- 110 columns
- 264 CPS-draft, 88 CPS-LQ
- 360 x 360 dpi resolution

CALL

Call Toll Free 7 To 7 Central Time Monday Thru Friday – 9 To 2 Saturday

USA FLEX

800-872-3539

FAX # 312-351-72904
Tech./Customer Service 312-351-7172

ORDERING INFORMATION: Minimum Order $100. MasterCard and Visa accepted. No surcharge on credit card orders. Shipping and handling additional. Credit cards not billed until order has been shipped. Corporations rated 3A2 or better and government accounts are accepted on a net 30 basis. C.O.D orders under $500 add $5.00 special handling charge. C.O.D. order over $500 add $10.00 special handling charge. We ship to the 50 states. APO, FPO, AK and HI add 5% to the total order to cover PAL and insurance. No sales tax outside of IL. All returns must have prior authorization from our Customer Service Department (312) 351-7172. All returns must be packaged in original packing material and include all warranty cards and manuals. Unauthorized returns and refused shipments are subject to a 20% restocking fee. All prices and specifications are subject to change without notice.

135 N. Brandon Drive, Glen Ellyn, IL 60139

Circle 286 on reader service card

Arlington Computer Products gives you the best prices. . .and service!

IBM PERSONAL SYSTEM II

Model 30, 286, 20 MB, w/Monitor ***$2099***
Model 50Z, 30 MB, w/Monitor ***$2549***
Model 55SX, 30 MB, w/Monitor ***$3099***
Model 60, w/44 MB and Monitor ***$3595***
Port. 70/120 ..... ***$5899***
Model 70, w/60 MB and Monitor ***$3949***
Model 70, w/121 MB and Monitor ***$5899***
Model 80, w/44 MB and Monitor ***$4595***
w/Color Monitor add $250
IBM XT & AT .... ***Call for Custom Configurations***

COMPAQ 286

DESKPRO 286 — (12 MHZ)
1 Drive 640K, 40 MB,
Mono Monitor ***$2295***

DESKPRO 286E — (12 MHZ)
1 Drive, 1 MG Memory,
40 MB, VGA Card &
Mono Monitor ***$2499***

COMPAQ PORTABLES

386 Model 40/100 . ***$5599/$6895***
Portable III 20 MB ***$3549***
SLT 20/40 ..... ***$3749/$4249***

COMPAQ DESK PRO

1 Drive, 640K,
20 MB Green or
Amber Monitor ***$1599***

COMPAQ 386

386S MOD 1 ..... ***$2349***
386S w/40 MB (16 MHZ) .. ***$2899***
386-25 w/110 MB-25 MHZ . ***$6449***
386-25 w/300 MB-25 MHZ . ***$8599***
386-33 ..... ***$7499***
386 w/60 MB (20 MHZ) ... ***$5099***
386E w/40 MB (20 MHZ) .. ***$4195***
386E w/100 MB ***$4895***

AST PREMIUM

286
10 MHZ, 512K, 1 floppy, 40 MB, serial
and parallel ports, mono monitor ***$1899***

BRAVO
8 MHZ, 512K, 1 floppy, 20 MB,
mono monitor ***$1349***

386 C
20 MHZ, 1 MG Memory Cache,
1.2 floppy, 40 MB (28Ms.),
mono monitor ***$3399***

LAPTOPS

ZENITH
Super Sport 20MB ***$2299***
Super Sport 286 20MB ***$3049***

TOSHIBA
1000/1200HD ..... ***$799/$2399***
3100 ..... ***$2799***
3200 ..... ***$3499***
5100 ..... ***$4749***

SAMSUNG

S330
10 MHZ, turbo,
1 floppy, 640K, 20 MG,
mono monitor ***$1049***

S550
12 MHZ 286, 1.2 drive,
1 MB Ram, mono card,
40 MB, mono monitor ***$1699***

DRIVES & TAPES

Ext. 5¼" for PSII $169
Ext. 1.2 for PSII $199
Toshiba 3½" 720K $89
Toshiba 3½" 1.44 ..... $99
Irwin 20 MB Tape $339
Irwin 40 MB Tape $449

SEAGATE HARD DISKS
20 MB for XT (ST225) . $259
30 MB for XT (ST238) . $269
40 MB for AT (ST251) . $319
40 MB for AT (ST251-1) $349
80 MB for AT $589

EVEREX
60 MB Internal $679
60 MB External $799
40 MB Internal $349

PRIAM HARD DISKS
130 MB $1399
160 MB $1550
330 MB $1995

IOMEGA
Bernoulli Box II 5¼" 20 MB Int. w/card $949
Bernoulli Box II 5¼" 44 MB Int. w/card $1159
Dual 20 Ext. w/card $1785
Dual 40 Ext. w/card $2175

PLUS
Hard Card 20 MB $529
Hard Card 40 MB $649
Passport 20 ..... $475
Passport 40 ..... $589

VIDEO BOARDS

ATI EGA Wonder 800 .... $219
ATI VGA Wonder $259
Compaq VGA $419
Hercules Graphics Plus .. $179
Hercules VGA $199
NEC MVA 1024 ..... $899
Orchid Pro Designer $289
Paradise Autoswitch 480 . $189
Paradise VGA $229
Paradise +16 ..... $269
Paradise Professional $369
Vega VRAM VGA $409
Vega VGA $249

MONITORS

NEC
Multisync IIA $499
Multisync IIID $649
Multisync Plus $889
Multisync XL 19" $2099

MITSUBISHI
EGA/Diamondscan . $349/$499

PRINCETON
Ultrasync $499
Ultra 16 ..... $879

SAMSUNG
Color/EGA ..... $229/$329
Multisync $429

MODEMS, FACSIMILES & DIGITIZERS

Hayes 1200/2400 ..... $289/$419
Everex 1200/2400 ..... $79/$149
Everex 2400 External $189
Everex 2400 PS II $179
Summasketch 12x12 ..... $379
Sharp FO-220 Fax $799
Sharp FO-300 Fax $1049
Sharp FO-330 Fax $1099

Arlington Computer Products, inc.
3025-E S. MALMO
ARLINGTON HEIGHTS, IL 60005

VISA MasterCard AMERICAN EXPRESS

FOR ORDERS & SYSTEMS QUOTES:

800-548-5105

CUSTOMER SERVICE AND IN ILLINOIS **312-228-6333**
SHIPPING **312-228-9748**
TECHNICAL ASSISTANCE **312-228-1470**
FAX **312-228-0516**

Prices and Availability Subject To Change Without Notice

With over 100,000 satisfied customers, PC Magazine says "...Arlington offers worry-free mail order purchasing at reasonable rates!"

OUR EPSON PRINTER PRODUCTS ARE SO GOOD WE NEED TO SHOW THEM OFF!

LX 810	*FX 850*	*LQ 850*	*LQ 1050*
$179	*$339*	*$509*	*$715*
FX1050	*LQ 510*	*LQ 950*	*LQ 2550*
$429	*$319*	*$539*	*$899*

PRINTERS

EPSON

LX 810	$179	LQ 850	$509
FX 850	$339	LQ 950	$539
FX 1050	$429	LQ 1050	$715
LQ 510	$319	LQ 2550	$899

OKIDATA

ML 320	$339
ML 321	$469
ML 390	$469
ML 391	$639
ML 393	$989

IBM

Quietwriter III	$1199
Proprinter III	$459
Proprinter X24E	$615
Proprinter XL III	$629
Proprinter XL24E	$799

HEWLETT-PACKARD

Laserjet II	$1689
Deskjet Plus	$699
Laserjet IID	$2895
1 MG	$269
2 MG Upgrade	$399
4 MG Upgrade	$699
Plotter-in-Cartridge	$239
25 in 1 Font	$265

TOSHIBA

321 S/L/341 S/L	$459/$619
351 SX	$949

PANASONIC

1124/1180	$329/$179
1191	$249
1592/1595	$399/$455
Laser	$1399

SOFTWARE

D Base III Plus/IV	$399/$449
Fastback Plus	$109
Framework	$399
Harvard Graphics	$275
IBM Displaywrite IV	$279
Lotus 123	$299
Microsoft Excel/Word	$239/$209
Multimate Adv. II	$279
R Base for DOS	$439
Symphony	$419
Ventura Desktop Publ.	$489
Word Perfect 5.0	$219

MULTIFUNCTION BOARDS

DFI w/384K	$169
AST 6 Pack w/384K	$189
AST Rampage Plus	$389
AST 286-2 for PSII	$549
Everex PSII w/2 MG	$695
Orchid Tiny Turbo	$219
Orchid Extra	$259
Intel Above Board 286+	$379
Inboard 386 w/adapter	$895
Inboard 386 P.C.	$599
Irma Board III	$399
AST 5251-II+	$529

MICE

Mouse Systems	$79
Microsoft	$99
Logitech	$69

MEMORY LANE

MATH CO-PROCESSORS

8087-2	$129
8087-3	$99
80287-6MHZ/-8MHZ	$149/$199
80287-10MHZ	$225
80387-16MHZ/SX	$319/$369
80387-20	$349
80387-25	$469
80387-33	$595
80C287-A	$275

CHIPS

64K Ram Chips	9 for $20
256K Chips/1 MG Chips	each $6/$15
256K Simms/1 MG Simms	$99/$169

COMPAQ UPGRADES

386 1MB/4MB	$399/$1295
Portable 386 1MB	$499
SLT 1MB	$499

IBM UPGRADES

30-286 512K	$189
Model 70 & 80 2MB	$799

★ ISSUE HIGHLIGHTS ★

INTEL 286+ W/2 MEGABYTES	*NEC MULTISYNC IIA MONITOR*	*SHARP FO-300 FAX*	*AST 6-PACK W/384K*	*WORDPERFECT 5.0*
$699	*$499*	*$1049*	*$189*	*$219*
EXTERNAL 5¼" FOR PSII	*4 MB UPGRADE FOR COMPAQ 386*	*HP LASERJET II*	*INTEL 80387-20*	*2MB UPGRADE FOR HP LASERJET II*
$169	*$1295*	*$1689*	*$349*	*$399*

WB989

Arlington Computer Products, inc.

3025-E S. MALMO
ARLINGTON HEIGHTS, IL 60005

Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within terms and limits of the manufacturers warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.

FOR ORDERS & SYSTEMS QUOTES:

800-548-5105

TERMS AVAILABLE TO APPROVED CUSTOMERS

HOURS C.S.T.
8 am - 6:30 pm — Mon-Fri
8 am - 1 pm — Sat

telemart

ORDER LINE

1-800-634-9270

Doing Business Since 1980 A Division of CW Marketing, Inc.

Computer Shopper Best Buy of 1988

The Acknowledged Leader in the Computer Mail Order Industry

FEDERAL

FREE
AIR EXPRESS SHIPPING
You Pay The Ground Shipping
We Pay The Air Difference

SOFTWARE

DESKTOP PUBLISHING/GRAPHICS

Adobe Illustrator/Windows	$365
Colorix (VGA Paint)	95
Corel Draw	315
Deluxe Paint II	Call
Designer	405
Draw Plus	235
EGA Paint	61
Finesse	85
Freelance Plus	309
Graph In The Box	65
Graph Plus	295
Harvard Graphics Master Pack	Call
Harvard Graphics 2.1	Call
Lucid 3-D	54
Microsoft Chart 3.0	240
Newsmaster II	43
NewsRoom	14
NewsRoom Professional	22
Pagemaker 3.0	489
PC Paintbrush +	79
PC Paintbrush (Windows)	79
Perform w/Designer & Filler	155
Print Q	72
Printmaster Plus	32
PrintShop	32
Publish It!	106
Pizzaz	42
Pizzaz +	65
Publishers Paintbrush	152
Timeline 3.0	349
Ventura Publishing	479
Ventura Publishing Pro	345
VP Graphix	56
Windows Express	38

INTEGRATED SOFTWARE

Enable DA	$409
Framework III	409
MS Works	92
PFS: 1st Choice	Call
Smartware II	429
Symphony	415

DISKETTES

Sony 5¼ Qty. 100 DS/DD	$59
Sony 3½ Qty. 100 DD	117
Sony 3½ HD Qty. 100	235

WORD PROCESSORS

AMI	$118
Grandview	175
Multimate Advantage II	275
PFS: Professional Write	Call
Volkswriter 4	Call
Volkswriter Deluxe Plus	Call
Word (Microsoft)	209
Word Perfect 4.2	205
Word Perfect 5.0	215
Word Perfect Library	58
Wordstar Pro 5.5	205
Wordstar 2000 Plus 3.0	265

UTILITIES

386 to the Max	$48
Above Disk	49
Brooklyn Bridge	66
Copy II PC	22
Desqview	69
Disk Dptimizer 4.0	37
Fastback Plus	98
Headroom	62
Mace Utilities	47
Microsoft Windows 286	61
Microsoft Windows 386	120
Norton Utilities 4.5	53
Sidekick Plus	125
Sideways	37
SQZ Plus	59
XTree Professional	61

MICE

Microsoft Bus/Serial Mouse 1.0	$97
Microsoft Bus/Serial Mouse w/Cadd	115
Microsoft Bus/Serial Mouse w/Windows	130
Logi Mouse – New Shape Hi-Res XT/AT	59
PC Mouse II Bus/Serial w/Paint	80

LANGUAGES

Basic Compiler (MS)	$179
C Compiler (MS)	273
Cobol Compiler (MS)	546
Fortran Compiler (MS) 4.1	273
Macro Assembler (MS)	91
Microsoft Quick Pascal	42
Pascal Compiler (MS)	180
Quick Basic	61
Quick C	61
Turbo Basic	62
Turbo C	95
Turbo Pascal 5.5	92
Turbo Pascal Dev. Library	255

SPREADSHEET

Lotus 1-2-3 Ver. 2.2	$334
Lotus 1-2-3 Ver. 3.0	335
MS Excel	315
Multiplan 4.0 Microsoft	119
PFS Professional Plan	Call
Quattro	148
Supercalc 5	290
Twin Classic	32
VP Planner Plus	112

MONEY MANAGEMENT

Dollars & Sense w/Forcast	$95
Quicken	34
Tobias Manag. Your Money 5.0	109

DATA BASE MANAGEMENT

Ask Sam	$159
Clarion	
Personal Developer	90
Professional Developer	369
Clipper	Call
d Base IV	399
Data Ease	449
Fox Base Plus	179
Paradox 3.0	445
PFS: Professional File 2.0	Call
Q & A	205
R:Base For DDS	452

COMMUNICATIONS

Carbon Copy Plus	$103
CompuServe Subscription Kit	19
Crosstalk Mark IV	127
Crosstalk XVI	103
Mirror III	49
Remote II	103
Smartcom II	79
Smartcom III	135

PROJECT MANAGEMENT

Harvard Project Manager	Call
Drg + Advanced	$78
Super Project Expert	409

HARDWARE

PRINTERS

ALPS	
Allegro	$315
All Other Models	Call
Citizen Printers	
120D	139
HSP 500	319
All Other Models	Call
Diconix	
150 Plus	325
Epson LQ510	335
LQ850	549
LX810	189
All Dther Models	Call
Hewlett-Packard	
Deskjet +	699
Laser Jet Series II	1785
NEC P2200	315
P5200	505
P5300	679
890 Silentwriter	3159
Other Models	Call
Okidata 320	339
321	469
390	469
391	635
All Other Models	Call
Panasonic	
1124	299
1180	185
1191	229
1524	549
1592	399
1595	445
All Dther Models	Call
Star Micronics	
NX 1000	155
NX 1000 Rainbow	225
All Dther Models	Call
Toshiba	
301	319
311	375
321 SL	429

HAND SCANNERS

DFI	
HS 3000 +	$179
Complete	
400 Hand Scan	145
Half Page	175
LOGI Scanman	168

TERMINALS

Wyse	
30	$285
50	359
60	299
85	Call
150	Call

NETWORKING

Novell Netware	Call

MODEMS

Anchor	
1200 Ext	$89
1200B w/Software	60
2400 EXT	139
ATI	
2400 ETC w/sw	155
Hayes 1200B	250
2400	425
Dther Models	Call
Prometheus	
2400B w/Software	100
Dther Models	Call
US Robotics	
Courier 2400	259
Courier 2400E w/MNP	315
HST 9600	595

COMPUTERS

ALR	
Power Flex 286/40MG	$1329
Other Models	Call
AST Bravo 5	849
Dther Models	Call
Everex	Call
Mitsubishi	Call
NEC	
Multispeed HD	2325
Panasonic	
FX 1650	645
Samsung	Call
Toshiba T-1000	669
T-1200FB	1475
T-1600	3350
3100E	2815
Zenith	
Minisport	1299
Supersport/2	1565
Supersport 20	2349

FAX BOARDS

Complete	
4800	$235
Communicator	529
Panasonic	
FX BM89	625

FAX MACHINES

Avatex	
EFAX 88	$639
Canon	
Faxphone 8	635
Epson	
Priority Fax F1000	775
Murata 1200	639
Toshiba 30100	905
Sharp FD 300	1005
UX 80	1015

BOARDS

AST Rampage Plus 286	$360
Six Pack/286	265
Six Pack Plus w/384K	269
All Other Models	Call
ATI EGA Wonder	165
VGA Wonder 256K	259
VGA Wonder 512K	319
Hercules	
Graphics Card Plus	170
All Other Models	Call
Intel 80287-8	185
80287-10	209
80387-16	319
80387-20	365
80387-25	455
80387-33	555
8087-1	155
8087-2	115
Aboveboard +	369
Aboveboard + P/S	395
Aboveboard 2 +	315
Inboard 386 (1 MG)	589
Inboard 386 AT (1 MG)	1179
Orchid Pro Designer +	319
Tiny Turbo 286	205
Paradise	
Autoswitch 480	149
VGA Plus	215
VGA Plus 16	275
VGA Professional	365
All Other Models	Call
Video-7	
Fastwrite VGA	245
V-Ram VGA (256K)	415
Zenith 449	239

KEYBOARDS

Keytronics	
KB101 +	$85

DISK DRIVES

Bernoulli Box	
10 MG	$895
Beta Int 20 MG	765
40 MG (Dual 20 MG)	1565
Colorado Memory	
Jumbo 4/80 EXT w/tape	435
Jumbo 40/80 INT w/tape	325
Hardcards	
Plus 20 MG Hardcard	515
Plus 40 MG Hardcard	649
Seagate	
20 MG w/WD Controller	259
251-1 40 Meg AT	365
40 MG w/Controller	425
All Dther Models	Call
Teac 1.2 MG AT	85
Floppy 360K	72
Toshiba 3.5 Dr 720K	69
3.5 Dr 1.4 MG	85

MONITORS

Amdek Monitors	
210A	$100
Mitsubishi	
Diamond Scan 14"	499
NEC	
Multisync 2A	495
Multisync 3D	645
Multisync 4D	Call
Multisync 5D	Call
Multisync GS	229
Dther Models	Call
Princeton	
Max 15	240
Ultrasync 12"	495
Ultrasync 16"	845
Other Models	Call
Sony	Call
Zenith 1490	599

VISA
MasterCard

- No Charge for VISA and Mastercard.
- We Do Not Charge Your Card Until Your Order Is Shipped.
- All products including D.O.A.'s, carry only manufacturer's warranties. We do not honor guarantees, rebates, trial period privileges or promotional programs offered by manufacturers.
- No returns on used or misordered product.
- You Pay The Ground Shipping 1-10# $7.00; 11-20# $11.00 (Except Alaska & Hawaii). We Pay the Air Difference.

- Free Air Applies ONLY to Orders Over $100.
- No APO, FPO, or international orders please.
- Call Before Submitting P.O.'s. Ask for National Accounts.
- Personal and Company Checks Will Delay Shipping 3 Weeks.
- Prices, Terms & Availability Subject to Change Without Notice.
- Add 5% for C.O.D. Orders.
- We Do Not Guarantee Machine Compatibility.
- Mailing Address: TELEMART, 8804 N 23rd Ave., Phoenix, AZ 85021.

- To Follow Up On An Order: (602) 944-1037.
- Order Line Hours:
  Mon.-Fri. 7:00 am-6:00 pm
  Saturday 9.00 a.m.-1:00 p.m.

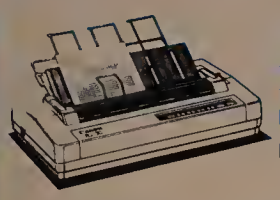
MEMBER MMC MICROCOMPUTER MARKETING COUNCIL of the Direct Marketing Association Inc

Circle 178 on reader service card

No one else dares to say "Compatibility Guaranteed."

When you buy a printer after consultation with our experts, we guarantee the printer you buy from us will work with everything you have... That's *any* PC and *all* your software. And why, you may ask, are we the only company to offer this guarantee? It's simple. No other company knows printers like Printers Plus. So get in touch with us right away. The call is free — our advice is priceless.

Canon®



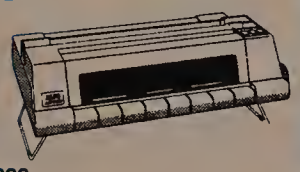
BJ-130
BUBBLE JET PRINTER

PRINTERS PLUS PRICE: **CALL**
LIST PRICE: $1095

FEATURES:
- Ink-Jet technology
- 360 DPI graphics resolution
- 220 cps draft
- 110 cps near letter quality
- IBM emulation / NEC P6 available

ALPS® ASP 1000

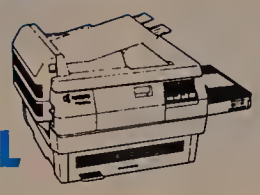
FEATURES:
- 9 pin
- 120 cps draft
- 24 cps near letter quality
- Jam-free flatbed design
- Epson / IBM compatible
- 1-year manufacturer's warranty



PRINTERS PLUS PRICE: **CALL**
LIST PRICE: $299

KYOCERA®

F1000A



FEATURES:
- 10 pages per minute
- 79 resident fonts
- Desktop publishing capabilities
- 2-I.C card slots
- Includes H-P, Diablo 630, Epson FX emulations

PRINTERS PLUS PRICE: **CALL**
LIST PRICE: $2895

QMS®

ADOBE® POSTSCRIPT

PS 810

FEATURES:
- 8 pages per minute
- 16 MHz processing speed
- Supports both IBM & Apple environments
- Parallel, serial & Appletalk interfacing
- PS Executive Utility included

PRINTERS PLUS PRICE: **CALL**
LIST PRICE: $4995

Call 1-800-877-4683 for advice and prices.

Don't see some famous brand names listed? Call anyway. We probably have them for less!

UNDER $249	UNDER $449		UNDER $799		UNDER $1299 AND LASERS	
ALPS ASP1000	ALPS Allegro 24	NLQ 2401W	ALPS 218	Fujitsu DL-2400	ALPS LPX600	NEC LC-890
Citizen 120D	Brother HR-20	Okidata 192	ALPS ALQ 224e	Fujitsu DX-2400	ALPS P2100	NEC P960XL
Epson LX-800	Canon A-65 / F	Okidata 292	ALPS ALQ 324e	NEC 3550	Blaser Star II	Newgen PS300
Epson LX-810	Citizen Tribute 124	Okidata 320	ALPS P2000	NEC P5200	Brother HLBe	Newgen PS400
NLQ 160XL	Citizen MSP 50	Olympia ESW2000	Brother HR-40	NEC P5300	Epson LQ-2550	Okidata 393
Olympia NP 30APL	Epson EX-800	Panasonic KX-P1092I	Brother M-1724L	NLQ 218	Epson DFX5000	Olympia LaserStar 6
Olympia NP80	Epson FX-850	Panasonic KX-P1124	Canon BJ-130	Okidata 293	Epson EPL-6000	Panasonic KX-P4450
Panasonic KX-P1180	Epson LQ-510	Panasonic KX-P1592	Citizen Tribute 224	Okidata 321	Fujitsu DL2400C	Primage 90G
Panasonic KX-P1191	Fujitsu DX-2300	Panasonic KX-P1595	Citizen Premier 35	Okidata 390	General Computer BLP	QMS PS810
Seikosha SP1600AI	NEC P2200	Seikosha SL80IP	Epson FX-1050	Okidata 391	General Computer PLP	Qume CrystalPrint II
	NEC P660		Epson LQ-850	Panasonic KX-P1524	Howtek Pixelmaster	Qume CrystalPrint Publisher
			Epson LQ-950	Seikosha SL130	Kyocera F-1000A	Qume CrystalPrint WP
			Epson LQ-1050	Toshiba P321SL	Kyocera F-2010	Qume Scripten
					Kyocera F-3010	Ricoh Laser 6000 / PS
					LaserMate II	Toshiba P351SX
					Mannesmann Tally 905	

11 Printers Under $300. Over 90 Models in Stock.

Apple®/Mac® users can save, too!
Making our printers Apple®/Mac® compatible is easy for us. Ask how.

We guarantee complete compatibility and integration with your hardware and software.

Authorized Dealer for all printers we sell!

We will match the best in-stock, delivered price advertised in this issue by an authorized dealer.

PRINTERS PLUS® SINCE 1982

Printers Plus, Inc.
14524-I Lee Road
Chantilly, VA 22021

Proud member of abcd The Microcomputer Industry Association

SAME DAY & 24-HOUR SHIPPING!
We guarantee same-day shipping of most in-stock orders placed by 2 pm EST.
After 2 pm, we guarantee 24-hour shipping of all in-stock orders.
APO / FPO orders now shipped within 5 working days!
All written inquiries answered promptly!

MasterCard and VISA accepted

Printers Plus and Computer Paper Design are registered trademarks of Printers Plus, Inc. of Vienna, VA.

HOURS:
Mon-Thurs: 9am - 7pm EST
Fri: 9am - 5pm EST
Sat: 10am - 3pm EST

Orders Only! 8 – 7 – 7 – 4 – 6 – 8 – 3
(800) 8-P-R-I-N-T-E-(r)

Virginia Inquiries:
(703) 734-0236
Fax Number:
(703) 734-3859

Offer good through telemarketing division only. Visit our retail showrooms for best local prices. 15% re-stocking fee applies to all returned or refused merchandise.

Circle 224 on reader service card

K E N O S H A

PACKARD BELL

PACKARD BELL TURBO
only $1099

10 MHz • 640K Ram • 1 Floppy Drive • 20MB Seagate Hard Disk • Parallel and Serial Ports • Clock • Mono/Color Graphics Card • Monochrome Amber Monitor • AT Style Keyboard • DOS & Basic • Word Processor, Desktop Manager and Utility Software •

Sorbus Warranty Service — 1 year warranty

KENOSHA COMPUTER CENTER

SALES LINE OUTSIDE WISCONSIN
1-800-255-2989
(in Wisconsin Call 414-697-9595)
Fax 414-697-0620

Shipping & technical assistance 414-697-9595

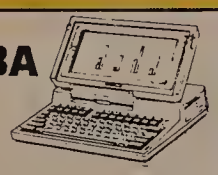
PACKARD BELL

PACKARD BELL PB 900 12 MHZ 286
only $1699

0 Wait State • 1 MB Memory • 40 MB Hard Disk • Monochrome Monitor • DOS • Word Processor & Desktop Publisher

1 year warranty

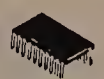
TOSHIBA LAPTOPS



1200 FB/HB	$1499/$1999
1600	$3199
3100E	$2799
3200	$3449
5100	$4199
5200 40/100	$4999/$5399

CO-PROCESSORS, CHIPS and MULTIFUNCTION BOARDS

intel CHIPS



8087-3/8087-2	$99/$129
80287-6MHz	$149
B02B7-BMHz	$199
B0287-10MHz	$225
80387-16MHz	$319
803B7-20MHz	$349
B03B7-25MHz	$469
80387-33MHz	$595
20C2B7-A	CALL

CHIPS

64K Ram Chips	LOW
256K Ram Chips	LOW
256K Simms Chips	$99
1MB Simms Chips	$169
1MB DRAM	$15
PSII Upgrades	**LOW**

COMPAQ 386 MEMORY MODULES

1MB	$399
4MB	$1295

HEWLETT-PACKARD MEMORY UPGRADES

1MB	$269
2MB	$399
4MB	$699

AST 6 Pack Plus w/384K	$1B9
AST Rampage AT w/512K	$3B9
AST 5251-11 Plus Enhanced	$529
Intel Above Board Plus	$399
Intel Inboard PC	$5B9
Intel Inboard AT	$1039
Orchid Tiny Turbo Extra	$259
Irma Board	$695

SUPERSPORT 286 w/20MB Hard Disk

only $3049

Supersport 286 w/40MB Hard Disk $3499

COMPAQ

286 w/40MB	$2149
286E w/40MB	$2399
286E w/100MB	$2899
386S w/40MB	$2899
386S w/100MB	$3299
386E w/40MB	$4195
386E w/100MB	$4795
386 25MHz w/110MB	$6449
Portable III, 20MB	$3599
Portable III, 40MB	$4199
SLT Laptop 20MB	$3749
SLT Laptop 40MB	$4249

AST

Premium 2B6 w/512K, 40MB	$1749
Bravo w/512K, 20MB	$1249
386C w/1MB Cache Memory, 40MB Hard Drive	$3349

LAPTOP ACCESSORIES

COMPAQ

1 MB Ram Expansion	$449
Modem	$279
Carrying Case	$79
Expansion Unit	$675
Math Co-Processor	$329

TOSHIBA

1200 Carrying Case	$54
Deluxe Carrying Case 3200/5200-3100/5100	$79
1200 AC Adapter	$79
1200/2400 Modem	$279/$229
Expansion Chassis Interface	$149
Expansion Chassis External 5¼" Drive	$199
1MB Extended Memory 1200/3100	$549
2MB Extended Memory Module 3100E	$929
2MB Memory Module 5200/5100	$969

ORCHID

ProDesigner VGA	$239
ProDesigner VGA+ w/512K	$299
Tiny Turbo	$209
Tiny Turbo Extra	$259
Ramquest 16/32	$279

HARD DISKS

SEAGATE

20MB w/contr. ST225	$259
30MB w/contr. ST238	$279
40MB for AT ST251-1	$349
80MB for AT ST4096	$575
Priam 40MB	$469
Plus Hard Card 20MB/40MB	$525/$649
Conner 40MB/100MB	$559/$1079

TAPE BACK UP

Everex 60MB Internal	$589
Everex 60MB External	$689
Maynard 60MB External	$829
Mountain 40MB Internal	$379
Mountain 40MB External	$579

MONITORS

Amdek 732	$429
Compaq VGA	$539
Mitsubishi Diamondscan	$499
Mitsubishi Multiscan 20L	$2195
NEC Multisync IIA	$499
NEC Multisync IIID	$649
NEC Multisync Plus	$879
NEC Multisync XL	$2099
Packard Bell Color	$239
Packard Bell EGA	$339
Packard Bell VGA	$379
Princeton Ultrasync	$499
Princeton Ultra 16	$879

GRAPHICS CARDS

ATI Wonder VGA	$259
Everex Enhancer	$129
Everex VGA	$239
Hercules Graphics Plus	$179
Orchid Pro Designer VGA	$239
Pro Designer Plus VGA w/512K	$299
Paradise Autoswitch 480	$149
Paradise Professional	$329
Paradise VGA Plus	$219
Paradise VGA Plus 16	$259
Sigma VGA H	$249
Vega VGA	$265
Vega VRAM VGA	$439

SOFTWARE

Word Perfect 5.0	$229
D Base IV	$449
IBM Displaywrite IV	$279
Lotus 123	$299
Microsoft Word/Excell	$215/$279
Multimate Adv. II	$279
R Base for DOS	$439
Symphony	$419
Ventura Desktop Publ.	$489
Wordstar 2000 Plus 3.0	$269
Wordstar Pro 5.0	$239

MICE & DIGITIZERS

Logitech Hirez/PSII	$85/$59
Microsoft Serial w/Paint	$105
Microsoft Bus w/Paint	$105
Summasketch 12x12	$375
Summasketch 12x18	$625

FAX MACHINES

Sharp FO-300	$1049
Sharp FO-220	$799
Sharp FO-330	$1099

EPSON PRINTERS

FX 850	$339
FX 1050	$429
LQ 510	$319
LQ 850	$509
LQ 950	$539
LQ 1050	$715
LQ 2550	$899
LX 810	$179

PRINTERS

OKIDATA

ML320	$339	ML391	$639
ML321	$465	ML393	$989
ML390	$465		

PANASONIC

1124	$325	1524	$539
1180	$179	1592	$399
1191	$249	1595	$439
Laser	$1399		

HEWLETT-PACKARD

Laserjet II	$1689
25-in-1 font	$265
Deskjet Plus	$699
Laserjet IID	$2895
Plotter in a Cartridge	$229

MODEMS

Everex 1200/2400 Int.	$79/$139
Everex 2400 External	$189
Hayes 1200	$279
Hayes 1200B w/Software	$279
Hayes 2400 ext	$419
Hayes 2400B w/software	$419
US Robotics 2400 Int	$149
US Robotics 2400 ext	$169
US Robotics 1200 Int	$84
US Robotics 1200 ext	$9B
US Robotics Cour. 2400	$279
US Robotics HST 9600	$599
2400 Internal IBM PSII	$179

MISCELLANEOUS

AB Switchbox	$39
Keytronics 101 Keyboard	$99
150 Watt Power Supply	$69

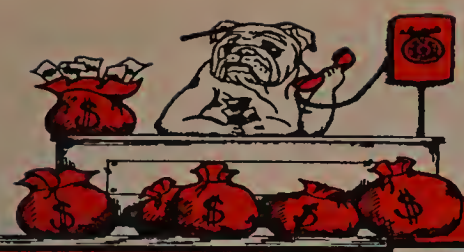
Prices and availability subject to change

No charge for MasterCard or Visa; American Express add 5%. We will ship COD on a cash or cashier's check basis only. Shipping & handling 3% — $6 minimum; AK and HI slightly higher. 15% restocking charge on returned items. Purchase orders accepted from Fortune 1000, Government institutions, schools and universities. 2% shipping discount available on orders over $2000 if prepaid by check.

KENOSHA
COMPUTER CENTER
2133 91st St.
Kenosha, WI 53140

C O M P U T E R C E N T E R

Circle 41 on reader service card



Dialing For Dollars– Call Bulldog and Save a Bundle!

PC WEEK MEMBER

NETWORK

Novell Advanced Netware V2.15 .. $1650
Novell SFT Netware 2.15 2499
Novell ELS Level I 4 User 419
Novell ELS Level II 8 User 929
Novell NE 1000 Ethernet Workstation Board 169
Novell NE 2000 199
ARC Net PC 130 119
ARC Net PC 220 149
ARC Net Active Hub/Passive Hub 215/69
Western Digitac Ethernet Card 235

Novell trained & authorized

COMPAQ

386 20E 40 mb. $4595
110 mb 5550
286 Desk Pro 12 mhz 1540
286E Desk Pro 1850
Compaq II Model IV 2879
Compaq Port. 386 Model 40/100 5579/6899
Compaq III 20mb/40mb 3495/4069
Compaq 386-S model 1/20/40 2350/2595/2999
Compaq 386-25 110/300 ..... 7195/9199
Compaq SLT w/20 mb 3850
Compaq SLT w/40 mb 4250

IBM

PERSONAL SYSTEM/2
Model 70 Portable 60/120 .... $5589/6029
Model 30 286 w/20 mb 1950
Model 50 - 30/60 ..... 2499/2739
Model 70 - 60/120 ..... 3899/5899
Model 80 - 40/70 ..... 4579/4875
Model 80 - 300 8899
Model 55 SX 30/60 ..... 2829/3119

MATH CO-PROCESS

We've got your number!

80387-25 ..... $449
80387-20 349
80387-16 319
80287-8 185
80287-10 205
8087-3/8087-2 ..... 89/119
80387 SX 289
80387-33 599
256K Chips/64K Chips ..... Call

MONITORS

NEC
Multisync II A $499
Multisync III D 649
Multisync 4D 1150
Multisync 5D 2350
Multisync XL 19" 2080

IBM
8503 ..... $209
8512 459
8513 559

PRINCETON
MAX12 ..... $149
Ultra 16 845
HX 12E 449
Ultrasync 475

MAGNAVOX
Amber 776 ..... $89
RGB80 8762 249
EGA 9CM053 .. 349

MITSUBISHI
Diamond Scan $499
HL6605-15" ... 1225
HL6905-19" ... 2250

ZENITH
1490 ..... $599

FAX

Panasonic FXBM 89 ..... $625
Toshiba 3300 839
Toshiba 3600 1025
Toshiba 3700 EN 1189
Sharp 300/330 ..... 725/989
Sharp 220 699

COMPATIBLE

8 MHZ TURBO
1 floppy, 640K, AT style keyboard, monographics card, mono monitor..$699
Color System add $150 w/20 mb add $249, w/30 mb add $269

286 Bulldog 10 MHZ
1 mb Ram, 1.2 floppy $895

BULLDOG 386 20 MHZ
1 mb Ram, 1.2 floppy $1595

Let us custom figure a system for you– our technical staff is second to none!

AST
AST Premium 286, 10 mhz, 0 wait state, 512K DOS keyboard, controller 1.2 floppy $1295
AST Premium 386 Model 300C 20 mhz, 1.2 floppy, 1 mg, DOS keyboard ... $2650

All AST computers carry a 1 year warranty

LAPTOPS

Who says you can't take it with you!

NEC Multispeed HD $2275
Toshiba 1000 639
Toshiba 1200 1849
Toshiba 1200F 1395
Toshiba 3100E 2749
Toshiba 1600 3250
T3200/T5100 ..... 3395/4239
Toshiba 5200 40/100 ..... 4999/5289
Zenith Super Sport 20 mb 2299
Zenith Super Sport 286 20 mb 3025

Pacific Rim external drives available for most Laptops - Call for prices!

DRIVES

Seagate 20 mb w/contr.ST225 ..... $239
Seagate 30 mb w/contr. ST238 269
Seagate 40 mb for AT ST251-1 329
Seagate 40 mb for AT ST251 309
Seagate 80 mb ST4096 539
Ext. Drives for PS/2 360/1.2 ..... 179/199
Toshiba 3-1/2" 720K int. 79
Toshiba 3-1/2" 1.44 mb. int. 95
Toshiba 5-1/4" 360K int. 68
Toshiba 5-1/4" 1.2 mb. int. 89
Bernouli Box II 5-1/4" 20 mb. int. 955
20 mb ext. w/card 1195
dual mb. ext. w/card 1769
44 mb internal w/card 1159
Plus Hard Card 40 649
Plus Hard Card 20 525
Plus Passport 20/40 ..... 475/579
Priam 130 IDIAT 1275
Priam 160 EC 1550
Priam ID 250 EC 1795

MICE & MISC

Microsoft Mouse w/windows $135
Microsoft Mouse w/PC paint brush ... 109
Mousesystems Mouse 89
Logitech Scan Man 169
Logitech Series 9 Serial 69
Logitech Series 9 Bus 79

PRINTERS

EPSON
LX 810 200 CPS, 30 NLQ $189
LX 860 264 CPS, 54 NLQ 339
FX 1050 264 CPS, 54 NLQ 429
LQ 510 225 CPS, 75 NLQ 319
LQ 850 330 CPS, 88 NLQ 509
LQ 950 330 CPS, 88 NLQ 519
LQ 1050 330 CPS, 88NLQ 709
LQ 2550 400 CPS, 108 NLQ 899

DICONIX
Diconix 150+ $325

OKIDATA
182 Plus 180 CPS, 30 NLQ 229
320/321 300 CPS, 62 NLQ 329/459
390 459
391 639
393 450 CPS, 120 NLQ 975
393 Color 1059

TOSHIBA
321 SL 216 CPS, 72 NLQ 439
351 SX 350 CPS, 100 NLQ 922
341 SL 216 CPS, 72 NLQ 589
311 EXPRESS 379

NEC
2200 339
5200 505
5300 669

PANASONIC
1124 319
1180/1191 ..... 185/229
1524 539
1595 449
3131 315
Laser KX4450 1359

HEWLETT-PACKARD
Laser Series II 1689
Laser II D 2895
Desk Jet/Desk Jet Plus 595/769
Pacific Data 1 mb/2 mb 285/435
Pacific Data 25-N-1 269
Pacific Page 439
Plotter in a cartridge 229
Headlines in a cartridge 249
Intel Visual Edge 449

IBM
Proprinter X24E 615
Proprinter XL 24E 799
Proprinter III 459
Proprinter III XL 629

CANON
BJ 130 699
LPB8 III 1795

GRAPHICS CARDS

Everex Micro Enhancer $125
Genoa Super Hi Res 145
Genoa 5100 179
Genoa5300 199
Genoa 5400 259
Hercules Graphics Card 169
Hercules InColor 199
Hercules VGA 169
Orchid 800 VGA 149
Orchid Pro Designer w/256K 229
Orchid Pro Designer + w/512K 309
Paradise Auto Switch 480 139
Paradise VGA Plus 199
Paradise VGA Professional 299
STB Chauffeur HT 129
STB Multi Res. II 149
Vega Deluxe 199
Vega VGA 229
Vega Fastwrite 259
Vega V Ram 369
ATI Wonder EGA 800 175
ATI VGA w/256K/512K 229/319

SOFTWARE

Aldus Pagemaker 3.0 ..... $469
Clarion ProDeveloper 385
Clipper 409
D Base IV 445
Enable O/A 409
Foxbase + ... 189
Freelance Plus 309
Framework III 439
Harvard Graphics 265
IBM Display Write IV 269
Lotus 2.01/3.0 ..... 299/329
Microsoft Word 5.0 209
Microsoft Excel 239
Multimate Advantage II 269
Peachtree II Complete 149
Paradox 3.0 429
Q & A 189
Super Calc V 1.0 285
Symphony 2.0 419
Ventura Desktop Publ. 479
Word Perfect 5.0 219
Wordstar 2000 + 3.0 269
Wordstar Pro 5.5 189

Lots of other software available– and all the prices are byte size.

TAPE DRIVES

Everex 60 mb. int. $589
Archives 40 mb int. 299
CMS 60 mb. int./ext. 559/625
CMS 150 mb. internal 799
external 829
Archives 60 int.or ext. w/card 569
Archives 150 int. w/card 929

MULTI FUNCT.BOARDS

AST 286 6 Pack w/512K $279
AST 6 Pack Plus w/384K 189
AST 5251-11 + Enchanced 529
AST Rampage 286+ 385
AST Rampage 286-2 for Model 50/60 549
Everex Mini Magic w/o K 59
Intel Above Board + w/512K 379
Intel Above Board I/O + w/512K 429
Intel Inboard 386 w/adapter 950
Intel Inboard 386 for PC w/1 mb 579
Intel Above Board II Plus for PS/2 w/o K 279
Intel Connection CoProcessor 699
Intel Modem for CoProcessor 259
Irma Board III 409
Logical Connection 256/512K .. 439/519
Orchid Ramquest 16-32 w/o K 279
Orchid Ramquest XT/AT w/o K 239
Orchid Tiny Turbo 286 195
Orchid Tiny Tubro Extra 249
Orchid Tiny Turbo AT 349
Orchid Ramquest II Z w/o K 169

MODEMS

The Great Communicators!

Everex 1200 int. $68
Everex 2400 int/ext 129/169
Hayes 1200/2400 ..... 279/419
Practical Peripherals half card 2400 w/Procomm 129
US Robotics 2400/9600 ..... 139/619
Supra Modem 2400 int/ext 89/109
Ventel Half Card 2400/ Crosstalk 299
Ventel 1200/2400 Plus 185/299
Ventel 1200/24 Plus 185/299

Sales Hot Line 1-800-438-6039

BULLDOG

COMPUTER PRODUCTS

WE ACCEPT VISA
MASTERCARD
AMERICAN EXPRESS

3241-E WASHINGTON ROAD • MARTINEZ, GEORGIA 30907
for INFORMATION, TECHNICAL, SHIPPING or RETURNS call:
(404) 860-7364 or (404) 860-6905 • FAX: (404) 860-7358

HOURS:
Mon-Fri 8:30 a.m.-6:30 p.m.
Sat. 9 a.m.-1 p.m.

Policy: Add 3% (minimum $10) shipping and handling. Larger shipments may require additional charges.NEW – International Division (404) 860-6905, FAX: (404) 860-7358. Georgia residents add sales tax. All prices are USA prices and are subject to change and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee. All returns must be assigned an RMA number for return authorization. Call (404) 860-6899.

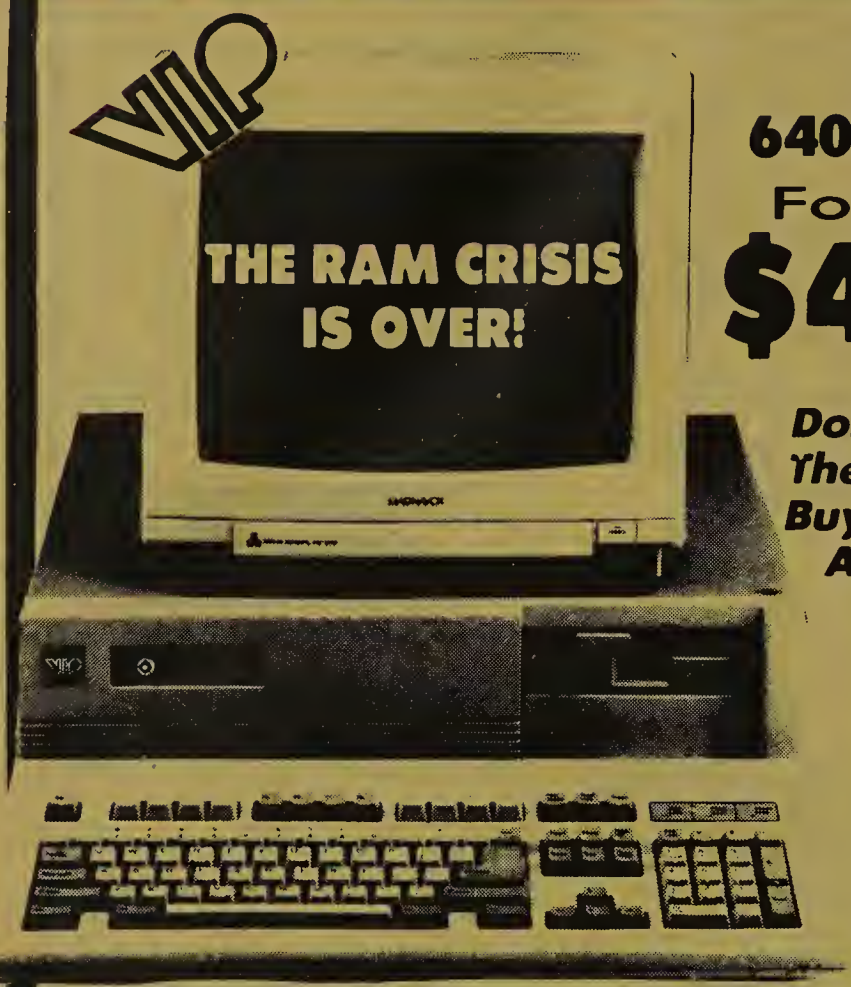
Circle 24 on reader service card

SINCE 10th Anniversary 1979

COMPUTER DIRECT

WE WON'T BE UNDERSOLD!*

Expires 11/30/89



Monitor Optional

Now, A Complete XT® Compatible Computer For Under $500!!

640K 10MHZ TURBO XT COMPUTER

For Only

$499.95 List $899.95

Don't Pass Up The Wise Buy, Buy Wise Now And SAVE!

We Won't Be Undersold!

FREE! DOS A $69.95 Value

NO HIDDEN COSTS - INCLUDES!

- ☆ High Tech IBM® XT® Compatible With Front Panel LED Display, Switchable Turbo Mode, And Security Keylock
- ☆ Full 640K RAM, Installed And Tested
- ☆ Parallel, Serial, And Game Ports Standard
- ☆ CGA, RGB, MGA Card Included
- ☆ Clock/Calendar
- ☆ 150 Watt Power Supply
- ☆ 101 Key AT® Style Keyboard
- ☆ 360K Floppy Drive And Controller
- ☆ 32K ROM
- ☆ Completely Assembled, Tested, And Burned In
- ☆ PLUS—Free Quality Word Processor "Ability"

TRIPLE THE VALUE!!!

1. We want you to be the first to take advantage of this opportunity. VIP Computer Inc. has made Computer Direct your source for the best deal in the country!

2. If this computer fails due to workmanship or quality during the first year, we will replace it.

3. NO RISK! 30 Day Home Trial!!!

Throw Away Those Keys!!!

1 MB 16 Mhz* 0 Wait Computer

Here's What You Get...

QUICK 12

- 8 Or 12 Mhz Switchable Turbo
- 80286 Microprocessor
- 1 MEG Standard, Expandable To 4 MB
- Compatible With All Video Cards
- Dual Floppy/Hard Drive Controllers
- 1 Parallel, 2 Serial, 1 Game Port
- 101 Key AT® Style Keyboard
- 1.2 MEG Floppy Drive
- Built-in Math Co-processor Slot
- 200 Watt Power Supply
- Operation Speed Indicator
- IBM®, OS/2, Novell, Unix Compatible
- 110/220 VAC Switch
- Suntac Chip-set Technology
- EMS 4.0 Software Included

$949.95 LIST $1299.95

NEW! State Of The Art Soft Touch Security Keypad.

*16 Mhz Throughput On Norton Performance Rating

Monitor Optional

® IBM, AT, and XT are Registered Trademarks of International Business Machines, Inc.

VIP 16 MHz* Computer

AT® Compatible

Includes MS-DOS 4.01 & GW BASIC

Comes Completely Assembled & Tested With All These Standard Features

- 512K, Expandable to 4 MB
- 80286/12.5 Microprocessor Runs at 16 MHz*
- Switchable Turbo 8, 10, 12.5 Mhz
- Phoenix BIOS
- High Tech Aero-Dynamic Case
- 101 Key Enhanced AT® Keyboard
- Dual Hard/Floppy Controller
- 2 Serial, Parallel & Game Ports
- 1.2 MEG Floppy Drive
- MGP Card
- Built-in Math Co-processor Slot
- 5 Device Bays - 3 Open, 2 Closed

JUST ARRIVED!

VIP 286

$779.95

*16 MHz Throughput On Norton Performance Rating

® IBM XT and AT are registered trademarks of International Business Machines

Monitor Optional

List $1299.95

IMMEDIATE ANSWER

800-BUY-WISE EXT. 35

800-289-9473 EXT. 35

Outside Service Area call 312 382 5058

We Love Our Customers

COMPUTER DIRECT
22292 N. Pepper Rd
Barrington, IL 60010

BEST SERVICE IN THE USA

PRICE IS NOT ENOUGH!

- 90 Day Immediate Replacement
- Experts in Customer Satisfaction
- Free Technical Assistance
- Bulletin Board Service
- Fast, Low Cost Delivery
- No Credit Card Fees
- 15 Day Home Trial
- Free Catalogs

LOWEST PRICES EVER!

SEAGATE Hard Drives & Cards

20 MEG Half-Height Drive Kit
Includes Controller
$229.95 List $499 Model ST-225

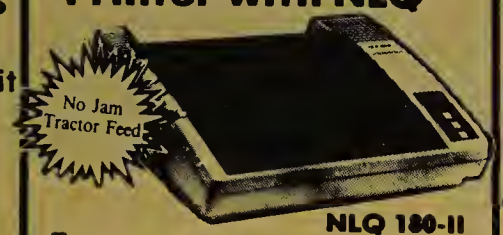
40 MEG Super Fast Drive
$378.95 List $799 Model ST-251-1

80 MEG Hard Drive
$599.95 List $799 Model ST-4096

20 MEG Hard Card
$294.95 List $399 Model ST-125

30 MEG Hard Card
$334.95 List $499 Model ST-138RLL

10" 180 CPS Printer with NLQ



NLQ 180-II
$149.95 List $399.95
No one can sell this printer for less!

720 CPS 6 Head Printer

15" Carriage
$699.95 List $1995
The fastest printer you'll ever need.

5¼" DSDD Disks As Low As...

Qty of 25 ....19¢ each
Qty of 25 w/sleeves.....21¢ each
Qty of 100 w/sleeves & labels .....24¢ each
19¢ ea
Lowest Price in the Country!

5¼" High Density Disks

As Low As...
Qty of 25 .....45¢ each
Qty of 25 w/sleeves .....47¢ each
Qty of 100 w/sleeves & labels .....48¢ each
45¢ ea
☆ Made in the USA! ☆

3½" DSDD Disks

As Low As...
Lots of 10 59¢ ea
59¢ ea
No Limits - Lifetime Warranty!

100% Hayes Compatible Modems

1200 Baud Internal
Modem Software Included ... a $29.95 Value!
$44.95 List $129.95

1200 Baud External
Fits in the palm of your hand
$69.95 List $238.90

2400 Baud Internal
Made in the USA!
Modem Software Included ... a $29.95 Value!
$89.95 List $129.95

2400 Baud External
Made in the USA!
$99.95 List $349.00

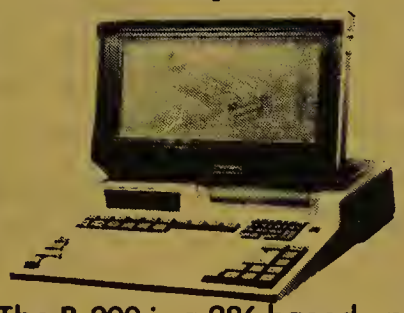
Magnavox 8762 Color RGB Monitor

$234.95 List $399

Magnavox EGA Monitor

$299.95 List $599

100% IBM® Compatible Laptop Computer



The B-300 is a 286 based unit that gives you the power of an AT® at only 15lbs. With its built-in20 MB hard drive and 1200 Baud Hayes compatible modem, this is the one you've been waiting for!

$2195.95 List $2495

High Speed Ultra-Compact PC with Supertwisted Display

Save 1%* On Any Product in Our Discount Catalog with the *Computer Direct Credit Card*

Computer Direct, Inc.

"We Love Our Customers"

Call Now ***800-BUY-WISE***
to Apply for the Credit Card and Get Your **FREE** Catalog
* Introductory Offer - Apply Now!

VISA
MASTERCARD
COD

Prices do not include shipping charges. Call to get your lowest delivered cost. We insure all shipments at no extra cost to you! All packages are normally shipped UPS Ground. 2nd day and overnight delivery are available at extra cost. We ship to all points in the US, Canada, Puerto Rico, Alaska, Hawaii, Virgin Islands and APO-FPO. Monitors only shipped in Continental US. Illinois residents add 6.5% sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors or omissions.

Circle 213 on reader service card

Law of the Jungle?

Marc B. Schnapp

Software publishing pachyderms should pay less attention to the law of the jungle and more to life in the jungle—or the way it could be if the biggest would leave a little something in the watering hole for their fellow inhabitants.

Consider what high school biology taught us about symbiotic relationships between animals. For example, look at the yellow-billed oxpecker, a diminutive hitchhiker that keeps ticks and other nasty insects off the backs of rhinoceroses, elephants, and hippopotamuses.

There once was room on Ashton-Tate's broad back for such simpatico passengers as Fox & Geller. The late George Tate knew these small fix-it companies could make ticks more bearable and increase customer devotion to his data base language. When Jeff Fox and Jake Geller cobbled together *Quickreport*, *dBASE* reports improved. When programmers needed a tool to make sense of their swelling applications, Wallsoft gave them *dFlow*.

Everyone was fruitful and multiplied.

Last year, I remarked to the NY Metro Clipper User Group how helpful mouse support would be for navigating a data base with a lot of fields—think how many taps of the <Enter> key we'd eliminate if we could move the mouse cursor past 30 to 40 fields and click on the one we wanted. A few months later, one group member gave me a shrink-wrapped box containing *FUNCky*, which among its 500 or so features included mouse support for Nantucket's dBASE-derived compiler *Clipper*. Dirk Lesko's package is helping me make my corporate clients much happier.

This is one reason dBASE language developers like myself have become so devoted to Nantucket's compiler. Whenever I need a feature that *dBASE* or *Clipper* doesn't provide, I simply consult the PC publications or my user group colleagues for a lead on products. We *Clipper*ites can always find a nifty add-on from some small entrepreneur. In this environment, users and developers alike have thrived.

But into this cozy habitat, Nantucket has chosen to introduce *Clipper Tools One*, a product of debatable merit that directly challenges the company's add-on industry. This could be a case of poisoning the well—if Nantucket kills off a thriving market of add-on tools, it may also stunt its own growth. And what benefits does Ashton-Tate's *dBASE File Recovery* provide that Paul Heiser's *dSalvage Professional* doesn't—other than a brand name and a marketing budget that lets the rhino roll over the smaller company?

Will the big boys, already hard-pressed to keep their flagships afloat, provide the same quality and support as their smaller but more focused counterparts? Or will quick "revenue enhancers" lead to consumer dissatisfaction, ultimately harming the behemoths' own balance sheets?

Software publishers don't owe add-on vendors a free ride, but are the yellow-billed oxpeckers of the data base market really so threatening? The thick-skinned rhinos of the African continent may lack grace and beauty, but they know better than to roll over on the little creatures that make their lives more bearable. ●

A Queens, New York, computer consultant, Marc B. Schnapp is president of the Professional Association of Database Developers.

Have a different perspective? Write Dan Lavin, User Ombudsman, PC World, *501 Second St., San Francisco, CA 94107.*

ANDY FREEBERG

The New 25 MHz Executive 325ET combines all the latest technologies in the most advanced 386 computer available. And it's transportable.

MAINFRAME TO GO

$10 PER MEGABYTE OF DRAM

The 325ET has a hard drive access speed almost undetectably different from that of dynamic memory. For the first time, the large capacity of a hard drive is accessible at an access time of **one millisecond (1 ms)**. Why limit yourself to 2, 8 or 16 megabytes of fast memory and pay $500 per megabyte, when you can have up to 160 megabytes at a cost as low as $10 per megabyte?

50 TIMES FASTER

Instead of waiting for the 65 millisecond (ms) access time of an MFM drive, or even the 17 ms of an ESDI drive, you can have instantaneous access to your data. The 325ET is blindingly fast with an average disk access time of 1 ms. In addition, the system architecture allows data transfer speeds that match drive capabilities. (That's really fast!). In fact, the overall read/write performance of the 325ET is 50 times faster (5,000%) than the Compaq© 386/25.

53,000 PORTABLE PAGES

The 325ET, when located along side of a monitor, takes little desk space. The compact design of the 325ET lets you carry it onto an airplane and easily stow it under your seat. Imagine bringing the equivalent of seven four-drawer filing cabinets worth of valuable information to your next meeting – accessible in just 1 ms.

The Executive 325ET is small enough and light enough to make it the most powerful transportable ever.

25 Mhz - 80386
1 ms HD ACCESS

EXECUTIVE 325ET

Standard features:

- Intel 80386 processor running at 25 Mhz.
- 0 wait state operation.
- Enhanced intelligent controller for **1 ms hard disk access** time and a transfer rate of 4 MB per second.
- 2 MB of RAM expandable to 16 MB (8 MB on board).
- High performance 16-bit VGA video adaptor.
- 3.5" 1.44 MB diskette drive.
- Sockets for 20 Mhz Intel 80387 coprocessor and 10 Mhz Intel 80287 coprocessor.
- 6 industry standard expansion slots (ISA).

$3799 or just **$114** per month

	Mono VGA	Color VGA
40 MB	**$4295**†	**$4650**†
80 MB	**$4645**†	**$4995**†
160 MB	**$5695**†	**$5995**†

† Includes system, monitor, Hard Disk and on-site warranty.

PRIORITY ONE COMPUTER SUPER STORE LOCATIONS

California: Bakersfield, Burbank, Fullerton, Irvine, San Jose, Sunnyvale, Westminster, Woodland Hills.
Kansas: Lenexa, Wichita
Missouri: St. Louis
Oklahoma: Stillwater
Tennessee: Memphis

AND THERE'S MORE...

1. Toll-Free Technical Support
Our friendly and knowledgeable factory trained engineers are just a phone call away. And we can solve most problems right over the phone.

2. Free on-site service
The 325ET comes with a full year warranty. Supported by Universal Protection Plan with a network of hundreds of service engineers, instant help is just a phone call away. Service is also available at any of our Super Stores, or at any of the hundreds of UPP service centers.

3. Trade up and save more
Now you can put that older and slower IBM©, Compaq©, or Apple© to better use. Your old system may be worth a thousand dollars or more. Our new Trade-Up program allows you to move up to the latest technology for less. Call one of our systems consultants for complete details.

4. 30 day money back guarantee
Your total satisfaction is our goal. If for any reason you are not completely satisfied with the 325ET you may return it within 30 days for a full refund.

5. Easy financing available
We offer both consumer credit for individual purchases, and leasing for business customers. Call us today and find out how easy it is to own the next generation of computers.

To Order or Inquire, Call:

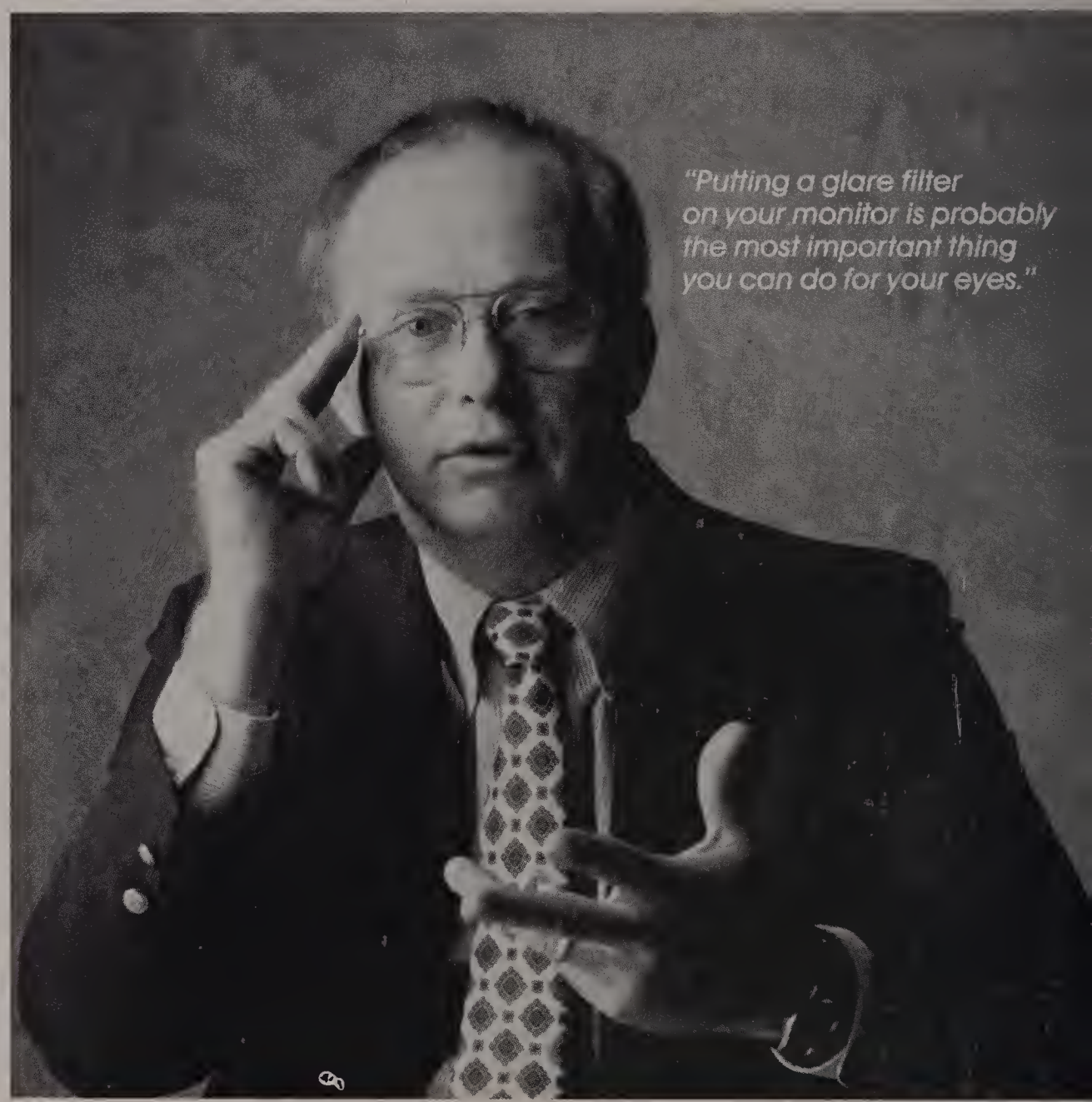
800-423-5922

PRIORITY 1 ONE COMPUTERS®

©Copyright 1989 Priority One Computer Corporation. All rights reserved. Executive, 325ET, and the Priority One logo are registered trademarks. IBM is a registered trademark of The IBM Corporation. 386/25 is a registered trademark of Compaq Computer Corporation. 386 is a registered trademark of Intel Corporation. Apple is a registered trademark of Apple Computer, Inc.

Circle 231 on reader service card

“Since I began using a computer five years ago, my eyeglass prescription has increased three times.”



Tom Judd, president and founder of Curtis Manufacturing, on why you should use a glare filter.

“Headaches, blurry vision, scratchy and burning eyes, overall visual fatigue ... These are the most common manifestations of monitor glare.
The solution? Get a glare filter.
The Curtis Anti Glare Glass Filter has been specifically designed to reduce monitor glare and improve on-screen contrast. Using one reduces headaches, visual fatigue, and even neck and back strain.
When I asked our design team to develop the highest quality, best value glare filter on the market, I learned that certain filter elements worked better than others:”

Glass vs. plastic:

“When I tested the plastic models, they scratched so easily after one cleaning, I could see for myself that glass was significantly better.”

Glass vs. mesh:

“I have a high resolution color monitor. When I put a mesh filter on it, the monitor was harder to read, not easier. The mesh made the characters appear fuzzy.”

Two-sided optical coating vs. one:

“I learned that monitor glare would hit both sides of the filter. A glass filter with optical coating on both sides visibly reduces glare better.”

Cleaning the filter:

“All glare filters need to be cleaned occasionally. I asked, ‘How?’ Our design team answered by including a bottle of specially formulated, non-streaking cleaner and a lint-free cloth in every package. No other manufacturer does this.”

Reversible frame:

“I asked for a durable, cosmetically attractive and ergonomically designed frame. Our designers delivered with a unique high-impact injection molded plastic frame which is black on one side—for those who want the utmost ergonomic design—and gray on the other side—for those who want to match the aesthetics of their monitor.”

The results:

“The technical specifications of our filters are impressive: glare reduced by 95%, contrast improved 20 times. The design team told me how successful our product was, but I didn't realize it until I put one on my computer. What a difference! In fact, the Curtis Anti-Glare Glass Filter worked so well, I had one added to every computer at our corporate headquarters.”

If you'd like to know more about the Curtis Anti-Glare Glass Filter and other Curtis products that make life in front of a computer easier and less stressful, write or call for our free brochure: *Tips to Computing More Comfortably,* Curtis Manufacturing Company, Inc., 30 Fitzgerald Drive, Jaffrey, NH 03452. (603) 532-4123 ext. 99

Manufacturing Company, Inc
CURTIS
30 Fitzgerald Drive, Jaffrey, NH 03452
A subsidiary of Rolodex Corporation

An Insilco International Specialty Company

© Curtis Manufacturing Company, Inc.